Chemical Week

March 29, 1958

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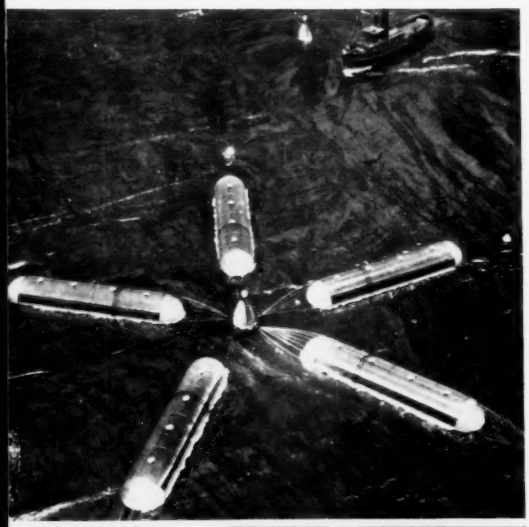

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Cutting nuclear fuel costs—it's the only real hope for competitive atomic power . . . . . p. 49

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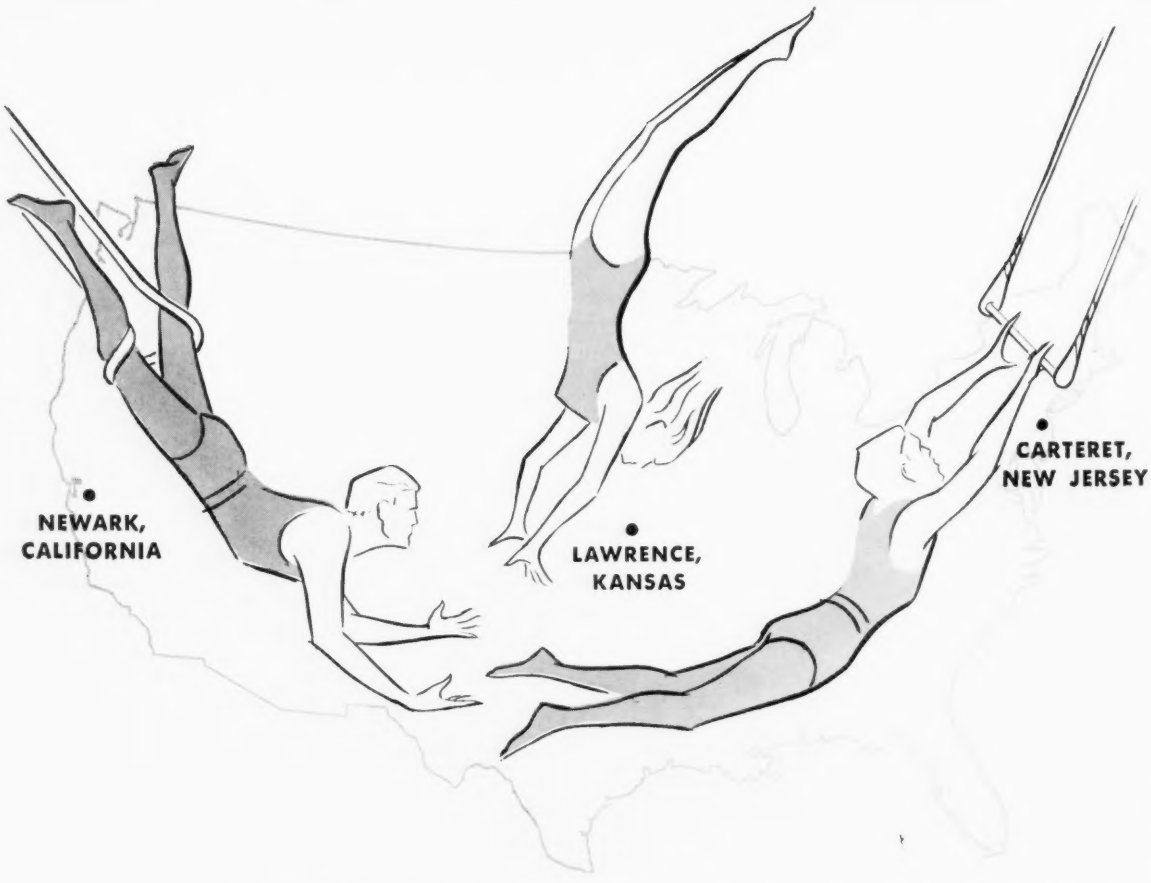

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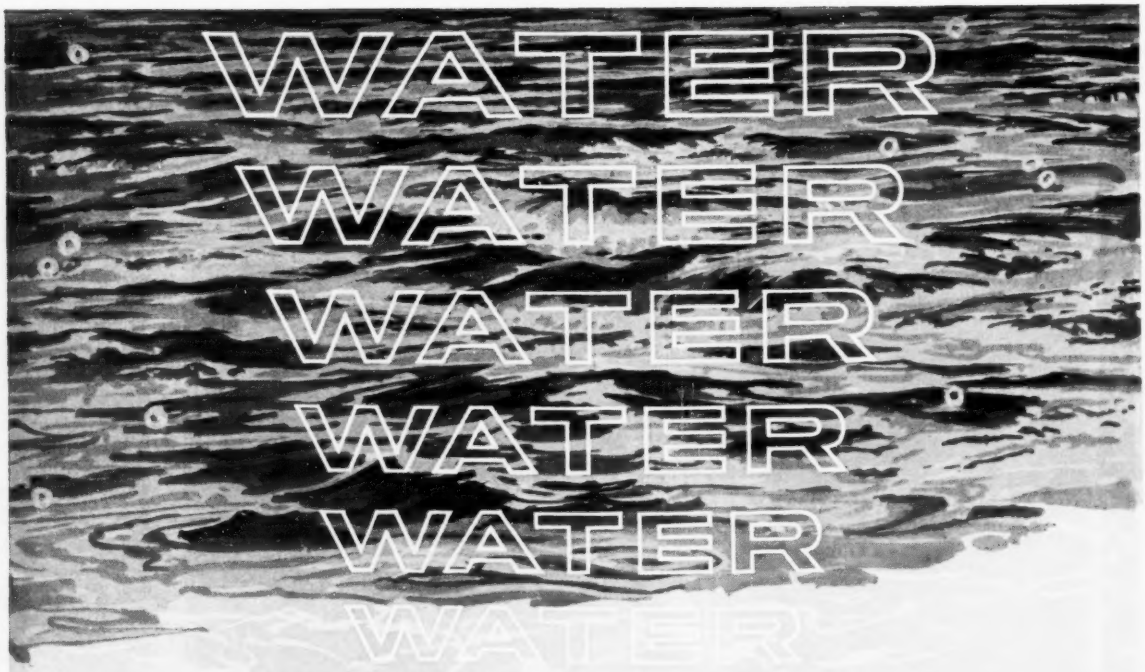

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TOP OF THE WEEK

March 29, 1958

- **Japan will have 20 petrochemical plants onstream by 1960** despite need to import raw materials.....p. 22
- **Add Du Pont's fluorine-containing Viton to list** of commercially available high-temperature-resistant elastomers.....p. 39
- **Fluorspar imports: Saving our resources or hogging market?** U.S. producers are currently alarmed over market loss.p. 63
- **Wash-and-wear rayon may get first strong promotion** as Courtaulds launches new treatment.....p. 67

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20 Pharmaceutical firms credit intensified research efforts for rising sales and profits during economic doldrums.

21 Lower prices pinch Freeport Sulphur's earnings, but management sees profits in greatly increased future demands.

22 Boost in barge-shipping rates? Congressional hearings on plight of railroads brings suggestion for toll on use of inland waterways.

Japanese petrochemical companies launch two major plants now, plan 18 others for 1959-60.

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40 Researchers probe flexibility of gold-cadmium alloys.

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Sausage-like plastic barges for chemical shipping are nearing commercialization, pushed by worldwide development programs.

63 MARKETS

Domestic fluorspar producers are alarmed over rising imports, which now take more than half U.S. market.

67 SPECIALTIES

Wash-and-wear rayon may join ranks of minimum-care fabrics—as Courtaulds launches new treatment for viscose.

68 And there's new treatment to upgrade cotton—Dow Corning shows off durable silicone finish.

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No. 13

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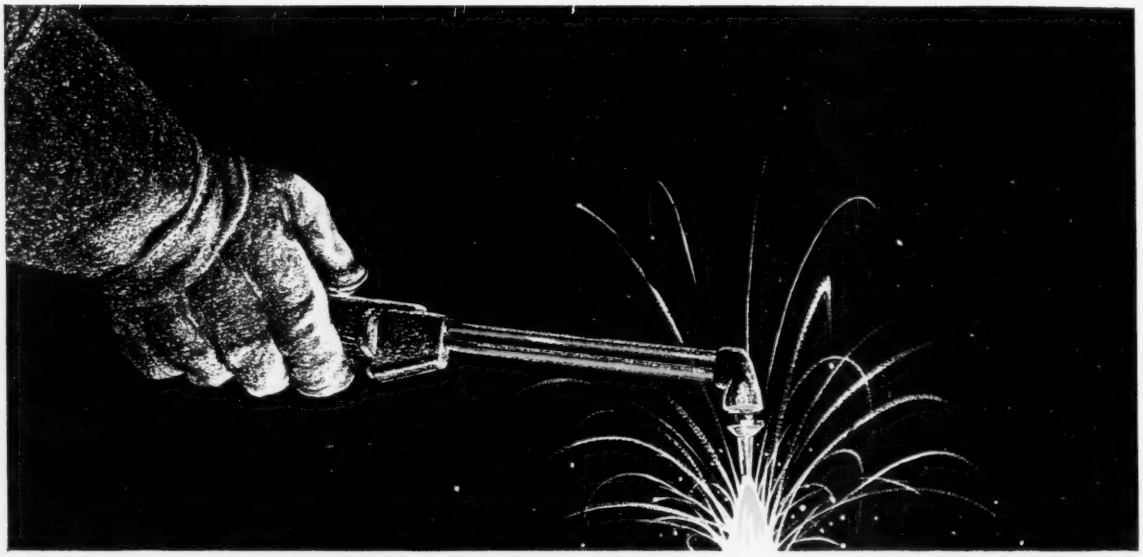

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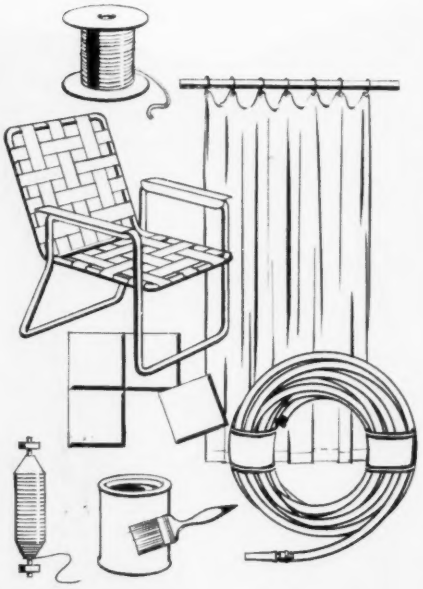

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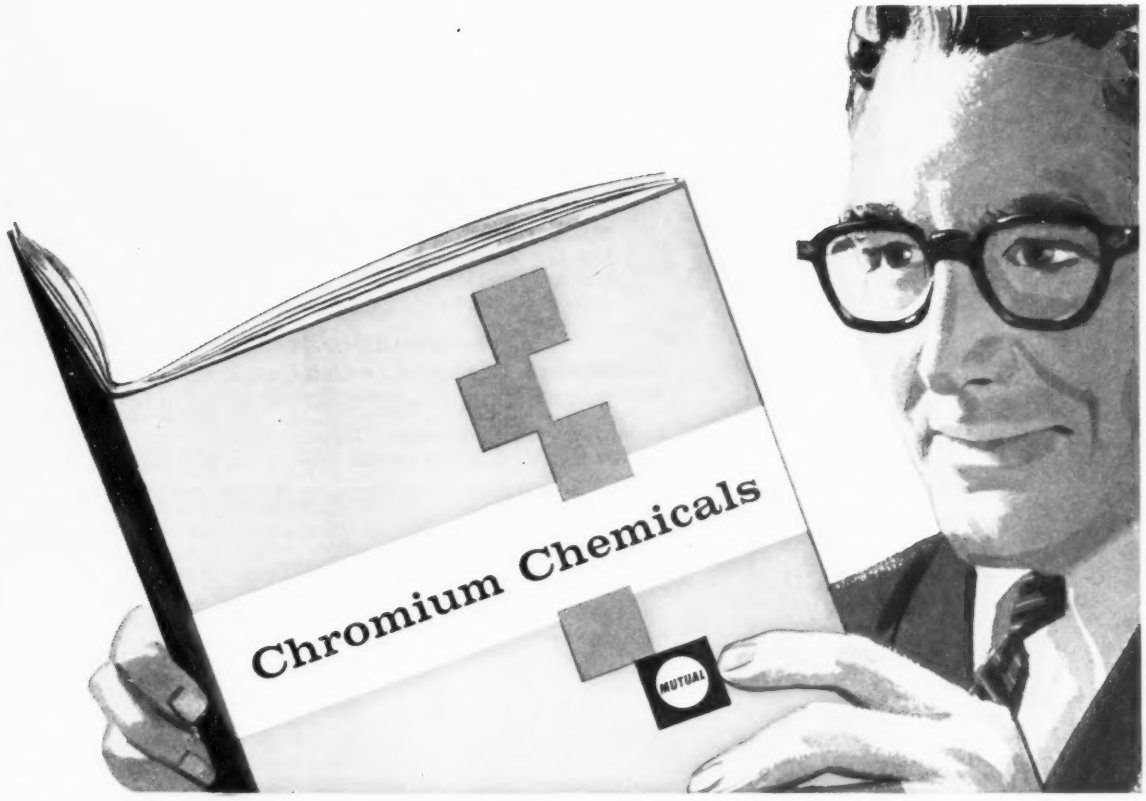

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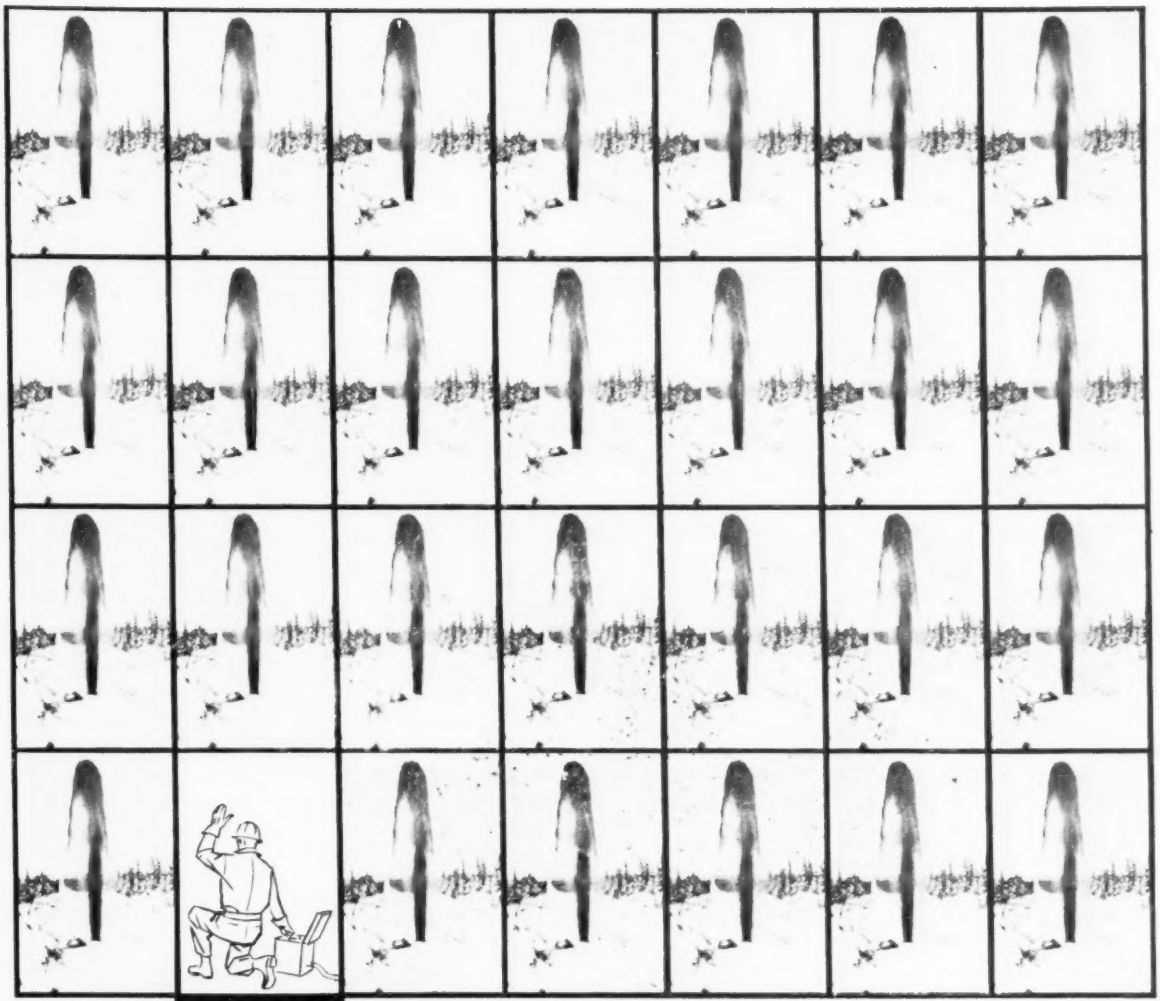

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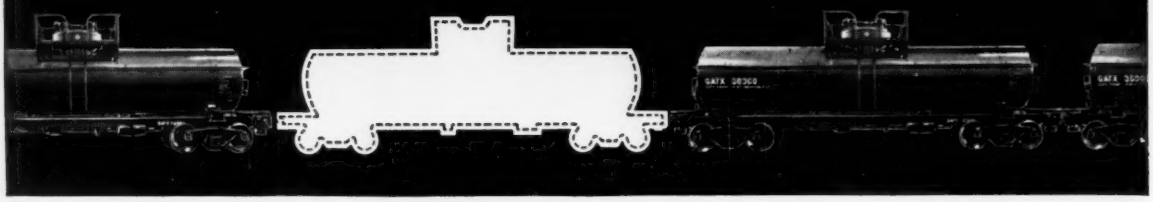

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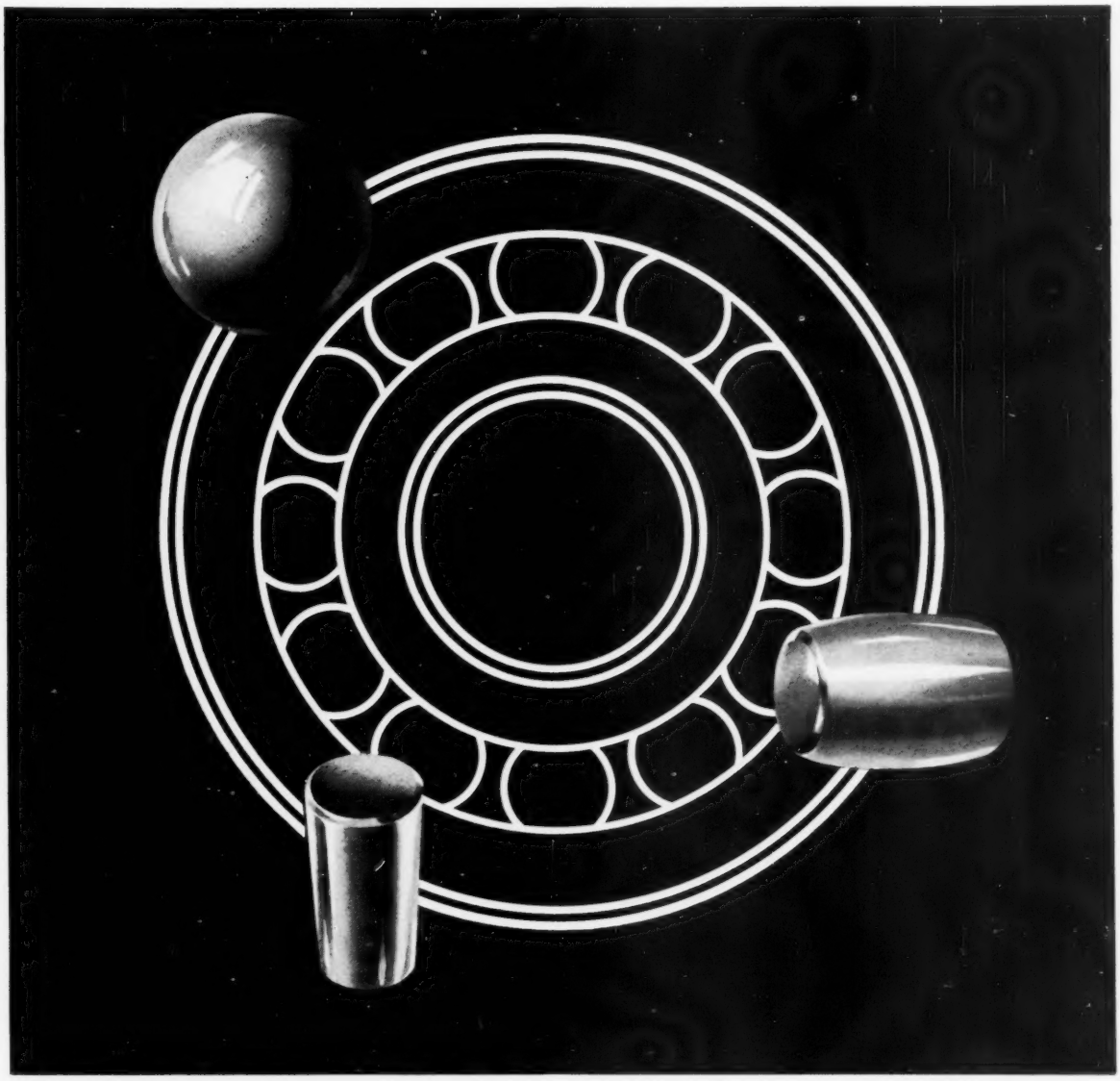

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2 Is your bag properly constructed for your product?
3 If loss of product is caused by deterioration, would special protective sheets help to reduce such loss?
4 Is the total cost of your bag out of proportion to the selling price of your product?
5 Does your product cost warrant redesigning your bag to merchandise your product more effectively?
6 Are you using the most economical filling machine available for packaging?
7 Are your current suppliers giving you the service you desire?
8 Are your suppliers integrated and capable of maintaining dependable service at all times, under all conditions?
9 Are your suppliers' representatives qualified to help you with your packaging, sales promotion and marketing?

Perhaps we may be able to help you to arrive at the right answers in order to achieve higher production at lower costs.

KRAFT BAG CORPORATION

Gilman Paper Company Subsidiary

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Plants at St. Marys, Ga. and Gilman, Vt.

Sales Agents for The **Kraftpacker** Open Mouth Bag Filling Machine

Gilman PAPER CO.
St. Marys Kraft Corp.
Gummed Tape Div.
The Gilmanized Corp.
Kraft Bag Corp.

☐ O.K. Kraft... Help me to answer your Quiz. Please have representative call.

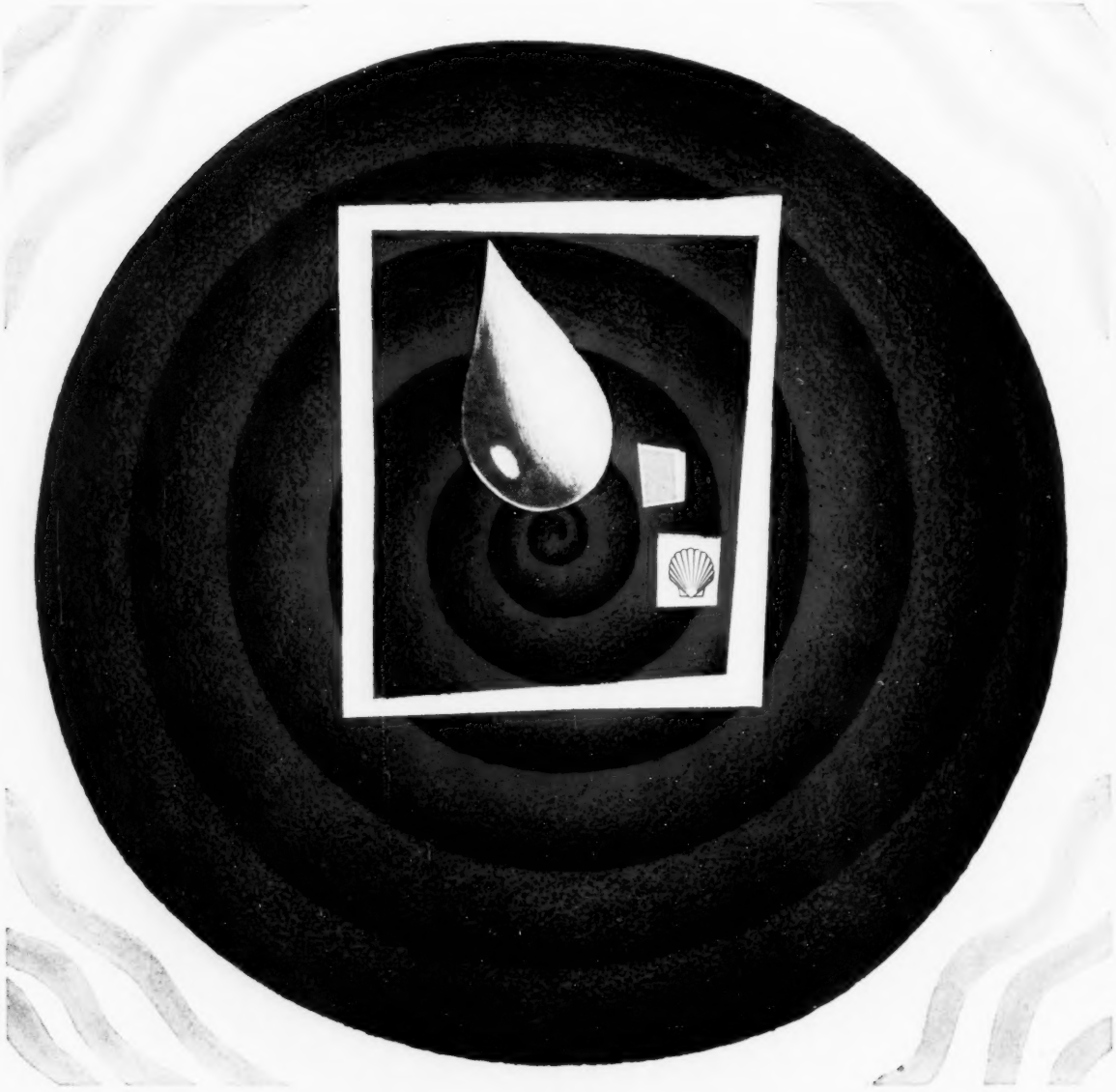
COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE____

PRODUCT MFD._____

NAME_____



EAK . . . a high-boiling solvent with a future

In formulations for surface coatings, ethyl amyl ketone complements low-boiling MEK and medium-boiling MIBK by promoting better flow and gloss and eliminating dry overspray.

EAK possesses excellent blush resistance, good diluent tolerance and high solvency for surface coating materials. Its slow evaporation rate contributes to excellent flow-out, tends to minimize pinholing and bubbling in the film.

EAK has proved to be a valuable component of thinners for various types of coatings such as automotive refinishing lacquers, silk-screen printing lacquers and multicolor lacquers. Cellulose esters, vinyl polymers and copolymers, and almost all synthetic and natural resins are soluble in EAK.

Your Shell Chemical representative will be glad to discuss your specific solvent needs with you. Write for Organic Chemicals, a catalog of Shell solvents, resins and intermediates.

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CHEMICAL SALES DIVISION

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SHELL

Business
Newsletter

CHEMICAL WEEK
March 29, 1958

A rise in chemical sales is shown by the Commerce Dept.'s preliminary figure for January sales by chemical and allied products producers. At $1,919 million, the figure is up from December's $1,726 million total, but 4% less than the $2,002 million for the previous January. And inventories continued to inch upward, rising from $3,863 million in December to $3,878 million in January.

Chemical concerns are still increasing cash dividend payments, according to another U.S. Commerce Dept. statistic released last week. For the first two months of this year, publicly reported cash dividend payments by all corporations were up by less than 0.19%; whereas the total for companies in the chemical and allied products group rose by 18.9% —from $45 million in the first two months of 1957 to $53.5 million in January and February this year.

Add to this the bullish tone that prevailed at the chemical industry session in the "scientific industries forum" sponsored by New York Society of Security Analysts. Vice-President John Van Deventer, of the Chemical Fund, presented an Arthur D. Little estimate that demand for chemicals will increase 80% over the next 10 years and require about $17 billion capital expenditures. And for the current year, American Cyanamid economist Ralph Burgess suggested that a second-half pickup in business activity may bring '58 sales of chemicals and allied products to within 1% of last year's record level.

•

Other possible harbingers of an early upswing:

• Standard Steel Corp. (Los Angeles) says its backlog of orders to build plants and equipment for makers of liquid gases, asphalt, missile fuels, etc., is up 150% compared with the first quarter of '57. President Robert Burns sees business prospects in the chemical, mining, sugar, fertilizer and related fields "as good as last year," with those industries resuming their growth trends "in the immediate future."

• Carmer Industries (Kenilworth, N. J.) says it will have to double its facilities for extruding Kel-F, nylon, and Teflon plastics in order to meet increased demands.

• A paper mill that has been shut down for about a year will reopen next month. The Allied Albany Paper Mill (Albany, N. Y.)—now owned by Steiner Paper Mills (Chicago)—is being converted to turn out a new product line.

• The 200,000-share new issue of Reichhold Chemicals common stock (*CW, March 22, p. 23*) was completely sold out on the same day it was issued. Price per share: $25.50.

•

Rumors of continuing merger talks between Shea Chemical and Hooker Electrochemical were confirmed last week by Hooker Chairman R.

Lindley Murray and Shea President Vincent Shea. They insisted that no definite agreement has been reached as yet.

Shea, which has phosphate plants in Columbia, Tenn., Jeffersonville, Ind., and Dallas, Tex., could provide intermediates for a long line of phosphorus compounds produced by Hooker.

•

Allied Chemical & Dye will style itself "Allied Chemical Corp.," if stockholders approve a recommendation by the board of directors. President Glen Miller says the board feels that the proposed new name will more clearly reflect the broad nature of the company's position in the chemical industry, and also will be better adapted to identify the company in its public and trade relations and in advertising.

But Allied makes it clear that it isn't de-emphasizing the National Aniline Division's dyestuffs business.

•

Allied and Kennecott Copper, in another change decided last week, make it clear that they aren't giving up on their joint titanium venture. The change concerns the construction schedule for the multimillion-dollar plant projected for Wilmington, N. C. Construction won't begin this summer, as originally planned; but a spokesman for Allied-Kennecott Titanium Corp. says the project has only been deferred, not canceled. "We have been delayed by current depressed market conditions, but we believe this is temporary, and we are continuing to expedite our research and design programs," says Vice-President Raymond Largent. "We have every intention of building a plant in Wilmington when conditions warrant." Both Allied and Kennecott—in their annual reports published last week—spoke of continuing efforts to improve methods of titanium production, processing and fabrication.

•

A 13.6% spurt in chemical sales last year—from $183 million in '56 to $208 million in '57—is reported by Eastman Kodak. (Figures include fibers and plastics, but not photographic materials.) Over-all, Eastman sales climbed 5%, to $798 million; net income rose only 4%, to $98 million. In foreign business, sales perked up 9%, to $224 million, but earnings dropped 15%, to $17 million—principally because of devaluation of foreign currencies.

•

Snow crimped chemical and pharmaceutical production at plants in various Middle Atlantic states last week.

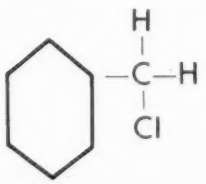
Power failure caused shutdowns at Victor Chemical's phosphorus chemicals plant at Morrisville, Pa. (for more than 24 hours), and Du Pont's Edgemoor, Del., titanium dioxide plant (down for one day). Absenteeism hit 50% at Pennsalt's Philadelphia headquarters and laboratories. In nearby Radnor, Pa., Wyeth Laboratories' plant cut shifts, and offices and research facilities were closed two days.

BRIEFS for buyers of

Chloro Aromatics
Phosphorous Acid
Oxalic Acid
Chlorine

Chloro aromatics
would carload delivery save you some juggling?

If your processing requires use of the benzyl, benzoyl, or nitrobenzoyl groups, you'll find Hooker a convenient source of supply for intermediates.



Benzyl chloride, for example, is available in 5-gallon and 13-gallon carboys, in 55-gallon steel or nickel drums, and, if you prefer bulk shipment, in nickel-lined tank wagon.

Other Hooker chloro aromatics you'll be interested in include:

Benzoyl chloride

meta-Nitrobenzoyl chloride

para-Nitrobenzoyl chloride

All are uniformly high in purity. The *meta*- and *para*-nitrobenzoyl chlorides are available in commercial quantity only from Hooker. You can have as little as a 5-gallon container or as much as a carload delivered promptly.

If you'd like to know more about any of these compounds, check the coupon for technical data sheets.

H_3PO_3
what *can't* you do with it?

Reducing agent, catalyst, color inhibitor, plating assistant, intermediate—there's almost no end, it seems, to the tasks you can tackle with *phosphorous acid*, H_3PO_3.

Produced in glass equipment, this OLDBURY® product comes to you as a 70% clear water-white aqueous solution, or as a white crystalline flake assaying 97% min., deliquescent and very soluble in water.

We're uncommonly proud of the flake form, which is presently saving one of our customers $45,000 a year in processing costs.

A strong dibasic acid, H_3PO_3 goes into phosphite salts used as plasticizers. It can serve as a catalyst in ether formation and, possibly alone or with other catalysts, in cross polymerization of olefins, alkylation of aromatics, and dehydration reactions.

You can use it to inhibit discoloration of some products by mineral acids; to deposit nickel and cobalt phosphides in plating; and to prepare dialkyl phosphites.

Are you planning any of these operations? If you feel that H_3PO_3 might ease a problem, use the coupon to request specifications and typical properties. Better still, write us on your business letterhead for a sample.

Oxalic acid
your Hooker distributor has it

Oxalic acid is one of our OLDBURY products that really get around.

Its uses run the gamut from "precipitating agent for rare earth salts" to "cleaning railroad cars."

This mild acidifying agent is widely used to remove rust stains from textiles and to eliminate rust from auto radiators. It helps control shading in textile dyeing. It's used in organic synthesis, in preparation of organic and inorganic oxalates, and as a catalyst in some organic reactions.

You can get OLDBURY oxalic acid now from your Hooker distributor in less-than-carload quantities. This acid assays 99.8% min. It comes in two pure white crystal sizes, No. 2 fine and No. 3 fine, packed in 100-lb. and 300-lb. Leverpak containers.

Ask your Hooker distributor to put a container or two in with your next order. Meanwhile, a check mark on the coupon will bring you specifications, typical analysis, particle size, and other data.

New wall chart
helps you handle chlorine safely

A useful adjunct to your plant safety program is this new Hooker chlorine wall chart.

It can help prevent accidents by showing your employees the most important do's and don't's for handling chlorine. In concise, easily understood language, it explains the operation of tank car, ton container, and cylinder valves; describes safe storage methods; and tells what to do in an emergency.

If you'd like a copy of the chart for posting, ask your Hooker salesman or check the coupon.

For more information on chemicals mentioned on this page, check here:

- ☐ Benzyl Chloride
- ☐ Benzoyl Chloride
- ☐ *meta*-Nitrobenzoyl Chloride
- ☐ *para*-Nitrobenzoyl Chloride
- ☐ Phosphorous Acid
- ☐ Oxalic Acid
- ☐ Chlorine Wall Chart
- ☐ New list of products—Bulletin 100-A

Clip and mail to us with your name, title, and company address. *(When requesting samples, please use business letterhead.)*

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Los Angeles Philadelphia Worcester, Mass.
In Canada: Hooker Chemicals Limited, North Vancouver, B. C.

HOOKER CHEMICALS PLASTICS

Drug Companies in 1957-58: Their Showing Exceeds

(Dollar figures in millions)

	1957 Sales	Change from 1956	1957 Profits	Change from 1956	1957 Profit Margin	Spent For Research 1957	New Plant and Equipment Spending '57
Abbott Labs	111.3	up 15%	12.7	up 17%	11.4%	5.0	7.9
American Home Products	372.0	up 17%	38.6	up 24%	10.4%	N.R.	13.0
Eli Lilly	199.8	up 10%	32.3	up 7%	16.2%	13.2	13.2
Johnson & Johnson	316.9	up 7%	15.9	up 7%	5.0%	10.0	9.1
Merck	186.9	up 8%	23.1	up 14%	12.4%	13.1	13.6
Norwich Pharmacal	33.5	up 13%	3.9	up 17%	11.6%	1.3	0.8
Parke, Davis	162.3	up 21%	27.9	up 58%	17.2%	6.6	6.0
Pfizer	207.2	up 16%	22.9	up 25%	11.1%	10.0	14.0
Schering	80.7	up 12%	15.4	up 11%	19.1%	5.2	3.2
G. D. Searle	30.6	up 9%	6.9	up 5%	22.5%	N.R.	0.5
Smith, Kline & French	115.5	up 10%	20.6	up 14%	17.8%	9.4	N.R.
Vick Chemical	103.4(1)	up 13%	10.4(1)	up 39%	10.1%	N.R.	2.5(2)
Warner Lambert	176.3	up 15%	14.3	up 32%	8.1%	N.R.	5.2

N.R.—Not reported; (1) 12 months to Dec. 31; (2) 12 months to June 30; (3) selected from products introduced since Jan. '57 on basis of probable increase in sales volume

In Pharmaceutical Earnings, an Even

Economic doldrums aren't fazing the pharmaceutical industry. Thirteen leading drugmakers, surveyed by CW last week, report they'll probably chalk up even bigger earnings in 1958 than they did last year. Moreover, research expenditures, already at a record level, will be stepped up substantially.

Pharmaceutical sales in January and February are reportedly higher than in the first two months of '57. Profits, too, are on the upswing. And the usual recession signs—such as requests for extension of credit, mounting inventories—aren't materializing as rapidly as in most other industries.

Prime reason for the industry's outstanding performance, say drugmakers, is its emphasis on research. On the average, pharmaceutical firms' research spending amounts to about 5% of sales—higher than any other branch of the chemical process industries.

More than 400 new products were introduced in '57. These accounted for a sizable chunk of last year's sales. And records show that 75% of the $1.7 billion worth of ethical drugs sold in '57 came from products developed since '49.

Probably the most spectacular performers last year were tranquilizers. It's estimated that 36 million prescriptions were sold in '57—a gain of more than 40% over '56. And several new, more potent products are bolstering tranquilizer prospects for '58. Other new prescription items coming up fast are broad-spectrum antibiotics, nonnarcotic pain-killers, diuretics, new cold vaccines and a host of other, highly specialized preparations.

But new products aren't the only reason for burgeoning drug sales. Executives report that changing attitudes of the public are helping, too. People are more health-conscious than they used to be; they're becoming more interested in preventing illness than in waiting to buy medicine after

Most CPI Records

Foreign Sales 1957	Foreign Sales Change from '56	Promising New Products[3]
27	up 17%	Tral (anti-cholinergic)
68	up 26%	Zachtrin (analgesic)
N.R	up 15%	Darvon (pain reliever)
54	up 16%	Liquiprin (analgesic)
50	up 21%	Diuril (diuretic)
N.R.	——	Furadantin (nitrofuran)
49	up 15%	Adenovirus vaccine
77	up 30%	Glucosamine (antibiotic)
16	up 21%	Trilafon (tranquilizer)
4	up 26%	Dartal (tranquilizer)
N.R.	——	Combid (for ulcers, etc.)
21[2]	up 14%	Parenzyme Aqueous[4]
45	up 10%	Pacatal (tranquilizer)

(1) anti-inflammatory and edema agent.

Better Year

sickness strikes. To back this up, drugmakers point to the sudden spurt in sales of old established products as well as sales of new ones.

Contrary to some predictions, the Asian flu epidemic did not boost pharmaceutical profits through sales of vaccines. Most found that vaccine production soon outpaced demand. But the epidemic did increase the incidence of respiratory disease—and, consequently, the sale of cold remedies. Companies such as Vick Chemical, Pfizer, and Parke, Davis, all big producers of antihistamines and other cold preparations, had big sales gains in the latter half of the year.

In addition, most companies managed to increase profit margins last year by holding down costs. Parke, Davis, which had a whopping 58% gain in after-tax profits, actually decreased its selling and administrative costs per $100 of net sales. This figure in '56 amounted to $32.15; last year it was $30.70. Similarly, P.D's cost-of-products-sold per $100 of net sales was $39.25 in '56 and $33.88 in '57.

In general, the companies that concentrate most on ethical drugs—such as P.D, G. D. Searle and Smith, Kline & French—had higher profit margins than firms with greater proportions of proprietary sales. Prescription items, of course, generally have higher mark-ups than over-the-counter preparations. Latest figures reveal that ethical drugs sold in '57 at manufacturer's level brought about $1.7 billion, compared with proprietary sales of $425 million.

Mild Criticism? Despite the industry's excellent performance and predictions of another good year in '58, one uncertainty looms on the horizon. Next month, the Federal Trade Commission is scheduled to report findings of an investigation of drug pricing policies.

Some companies look for mild FTC criticism—with pricing only secondary. They predict FTC will put more emphasis on patent policies, such as licensing.

But even if the investigation does censure industry on pricing practices, and perhaps cause pressure for price legislation, it's not likely to cause an industry-wide earnings downturn, particularly after drugmakers give their side of the story. The industry has some strong arguments in defense of its price levels: high research costs, the speed at which new products are replaced, and the greater health benefits from modern drug preparations.

Too, the pharmaceutical companies are investing heavily in new plants and equipment. Examples: Parke, Davis's $1-million facility to produce adenovirus vaccine, and increases in overseas investments by most of the companies surveyed.

In all, the outlook is good. While drug executives aren't discounting the possibility of a deeper recession that could erode profits, they don't see much evidence of one so far. Based on business through mid-March, all are looking to another record year in 1958.

Betting on Sulfur Boom

The sulfur industry is being hurt by current low prices of elemental sulfur. That's the opinion of Langbourne Williams, president of Freeport Sulphur Co. (New York). Last week, he predicted that the present oversupply of this material may disappear because low prices make it unprofitable to maintain current output levels.

Williams voiced these views to the New York Society of Security Analysts. On that same day, his company reported to stockholders that 1957 sales were down 7.6%, to $63.3 million, with net income off 3.1%, to $12.97 million.

But Williams takes the position that the long-term outlook for the sulfur industry in general and for Freeport in particular is good. He reasons that "substantial increases" in sulfur demand are sure to come; and points out that his company is now gaining strength not only in sulfur but also in nickel and cobalt, oil and gas, and potash.

200% Increase Foreseen: It seems likely, Williams said, that world consumption of sulfur will rise from last year's 16 million tons to more than 50 million tons by 1983.

"Such figures may seem fanciful," he added, "but not as fanciful as I would have sounded if I had come here when I became president of Freeport 25 years ago and predicted that Freeport would today be producing five times as much sulfur as we were then producing—which is what we are doing."

Freeport, Williams pledged, intends "to do its level best to see that this country, and the world, too, is never again faced with a sulfur shortage."

He said the company plans to keep operating its two high-cost mines, "even though we would make more money by closing [them] down and selling the equivalent amount of sulfur from our low-cost mines."

In addition, Freeport is starting two new low-cost producers—one at Lake Pelto, La., the other six miles offshore from Grand Isle, La. But these new mines won't produce before 1960.

Meanwhile, Freeport management —trying to keep from "being too much influenced by short-term maladjustments"—has arranged for a $25-million bank credit while it ponders the need for any long-term financing.

Bargemen Hit Tolls

Inland waterway carriers—whose barges haul more than 10 million tons of chemicals each year—last week blasted a scheme that would increase barge freight costs. Their objections were aired at a one-day hearing before the Senate Surface Transportation Subcommittee investigating the railroads' profit slump.

The senators had already heard the railroads' proposals on how to stop the profit slide. Of concern to barge firms: railroaders' suggestions that the government charge for use of waterways and that railroads be allowed to operate waterway carriers.

The bargemen hit back hard. Tolls, exhorted A.C. Ingersoll, Jr., American Waterways Operators president, would be "uneconomic, impractical and illegal." Other witnesses warned that tolls would be passed on to ultimate consumers, would put both shipper-customers and low-cost carriers out of business.

Ingersoll asserted that permitting railroads to operate on the waterways would open the way first for "ruthless rate-cutting," ultimately for higher rates once the waterway competition was killed.

The subcommittee has no specific legislation before it, and Congressional action on proposals is not expected.

Company-wide Gains

In all chemical product areas, Food Machinery and Chemical Corp. boosted sales totals in the past year.

The company's annual report—now going to stockholders—relates that over-all sales totaled $313.9 million, up 4%, while profits were up slightly, to $15.9 million. Chemical products accounted for 43.9% of the volume, with commercial machinery and equipment contributing 39.9%. The rest, 16.2%, came from defense material produced for the armed forces.

Of the chemical sales, $46.4 million came in phosphates, barium and magnesium chemicals; $33.2 million in alkalis, chlorinated chemicals and carbon bisulfide; $30.0 million in agricultural chemicals; $15.0 million in organics, fine chemicals and plasticizers; and $13.4 million in peroxygen chemicals.

Outlook for '58: a sales increase, with profits at least equal to '57's.

Onstream in April: Sumitomo's 12,000-tons/year polyethylene plant.

Petrochemicals for Japan

Japan's fast-growing chemical industry is taking its first big steps into petrochemicals production this spring as two major plants come onstream.

Earlier this month, Mitsui Petrochemical Industries Ltd. began producing the country's first polyethylene at the rate of 1,000 tons/month in its new Iwakuni plant. In April, Sumitomo Chemical Co. Ltd. will start making polyethylene on a man-made isle off Shikoku (a southern island). Production will start at 150 tons/month, work up to 1,000 tons.

Mitsui's plant will also produce ethylene oxide (6,000 tons this year), ethylene glycol (4,800 tons), phenol (12,000 tons), acetone (7,000 tons), dimethyl terephthalate (7,680 tons).

The new plants are among the frontrunners of about 13 petroleum chemical and seven gas chemical plants slated to come onstream by 1960. They should free Japan's organic chemical industry from dependence on coal. Petrochemical capacity targets for '60: 600,000 tons/year derived from gas, 500,000 from petroleum.

Among other big petrochemical plants scheduled are Nippon Petrochemical (ethylene, 25,000 tons/year; propylene, 16,300 tons); Mitsubishi Yuka (styrene monomer, 18,000 tons/year; polyethylene, 10,000 tons); Showa Denko (ammonia, 36,300 tons/year; urea, 48,000 tons).

Slow Growth: Until now, Japan's petrochemical industry has been in its infancy. A few small plants produced chemicals such as methanol, urea, formalin, isopropanol, acetone. Blocking the industry's development have been obstacles familiar to the Japanese industry: shortages of capital, raw materials and know-how.

To finance its petrochemicals push, Japan lowered otherwise-rigid protective bars.

Total capitalization of Japan's entire petrochemicals industry is now about $93 million. About $10.7 million more will go for license payments, royalties and imported machinery. By Japanese standards, that's a big stake, considering that the country's two biggest chemical firms, Sumitomo and Mitsui, have total chemical investments of only $22 million and $9 million, respectively.

The need for know-how has been met by another government concession: the doors were left open for foreign tie-ins. Mitsui, for example, has an agreement with Germany's Karl Ziegler; Sumitomo, with Britain's Imperial Chemical Industries; Showa Denko, with Phillips Petroleum.

The raw-materials problem will continue. Natural gas reserves are being expanded. But oil—more important—will largely have to be imported. Last year, petroleum and petroleum products accounted for 10% of the tab for total imports.

EXPANSION

Diatomaceous Earth: Eagle-Picher Co. has started construction of a $2-million diatomaceous earth plant at Lovelock, Nev., about 25 miles from the firm's open-pit mine. The plant is slated for completion in August, will have a capacity of 36,000 tons/year of natural and calcined filter aids. Kaiser Engineers (Oakland, Calif.) is the designer and builder.

•

Cement: Riverside-Arizona Cement Co. (Los Angeles) will build a $10-million, 1.5-million-bbls./year cement plant near Clarkdale, Ariz. Construction will start in May; production goal is late '59.

In Fort William, Ont., St. Lawrence Cement Co. is building a $50,000 cement plant and office building.

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Gasoline: Sun Oil Co will build a $500,000 district terminal off Bramers Lane (near Louisville, Ky.) on the Ohio River. Work starts next month.

•

Plant Sites: The Army has asked Congressional permission to lease three ordnance plants to private industry. The facilities, all in Texas, are: Lone Star Ordnance (Texarkana), Longhorn Ordnance (Karmack), Pan-Tex Ordnance (Amarillo).

COMPANIES

Stepan Chemical Co. (Chicago) and its majority stockholders have asked the Securities & Exchange Commission for clearance on offerings totaling 253,000 shares of Stepan common stock. The company wants to issue 50,000 new shares for acquisition of outstanding capital stock of Ninol Laboratories (Chicago). And 21 stockholders who now own 565,553 of the company's 600,000 shares outstanding want to sell 203,000 shares through a broker.

•

Merck & Co. (Rahway, N. J.) stock is involved in another secondary offering application now pending before SEC. The estate of the late George W. Merck—former board chairman—is seeking permission to sell 225,000 shares to satisfy certain cash requirements. The estate now owns 469,462 shares, about 4.7% of the company's outstanding stock.

•

Air Reduction Co. (New York) "will continue to emphasize the long-range point of view in its forward planning," says company President John Hill. Airco's annual report—out last week—states that capital expenditures in '58 are expected to be only slightly less than last year's $29.05 million.

•

Rohm & Haas (Philadelphia) expects '58 net income to be somewhat below last year's $15.6 million. According to the company's annual report, mailed last week, new units at Houston have strengthened R&H's raw-materials position—but they have added operating expenses, too. This factor combined with pressure on profit margins will account for the reduced earnings (weighted average selling price of R&H products declined 1.2% last year). Construction expenditures for '58 are estimated at about $16 million, compared with last year's $34.7 million.

FOREIGN

Polyethylene/Germany: Two West German companies—Chemische Werke Huels and Hibernia—plan to build commercial-scale plants to produce polyethylene under the tradename Vestolen. Both plants will use the Ziegler low-pressure process, and Huels will market all the output. Plant capacity: 500 tons/month each. Both firms are operating pilot units.

Huels says it has been experimenting with polypropylene, polybutadiene and polymers of higher hydrocarbons, and will soon be offering polypropylene samples to prospective customers.

•

Sulfuric Acid/Italy: Latest step in the development of Sicily's chemical industry is the decision by Agip-Mineraria—a unit of the Italian government's gas and oil syndicate, Ente Nazionale Idrocarburi — to build a sulfuric acid plant on the island.

•

Chemicals/Rumania: Rumania has outlined these principal chemical projects for 1958:

To complete construction and start trial runs of nylon works; to start production of superphosphates; to begin operation of a polyvinyl chloride installation; to put onstream a modern chlorine plant; and to increase production of plastics, detergents, drugs, paints and lacquers, dyes and soda products.

•

Fertilizer Exports/Japan: The Japanese government and Japan Chemical Fertilizer Export Assn. are splitting the cost of a program to promote sales of chemical fertilizers in southeastern Asia countries. A Japanese fertilizer center will be set up in Bangkok, Thailand, and three Japanese agricultural experts will visit the area. For the first six months of '57, Japanese fertilizer companies' exports to oriental nations totaled 39.8 million—a 139% increase over the corresponding period in '56.

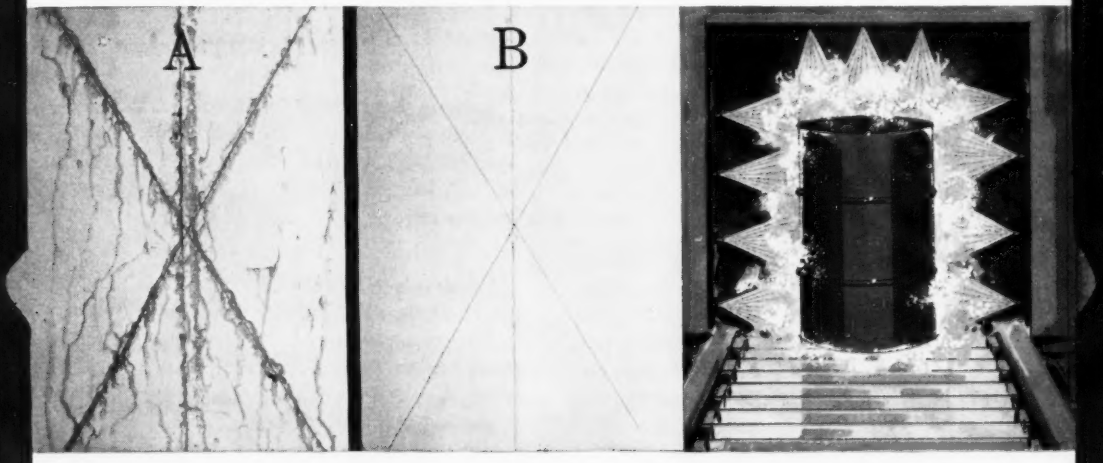
•

Rockets and Propellents/France: Sponsored by France's Ministry of Defense, an industrial organization known as France-Rockets has been organized to study problems of producing missiles and propellents. The new group has sent a team to the U.S. to observe missile development programs.

HERE'S PROOF that completely phosphate coated Inland drums offer greater rust protection

These unretouched photographs show panels cut from the sides of two similar steel drums. Panel A was cut from a drum which was not phosphate coated before painting . . . Panel B is from a drum which was fully phosphate coated by the Inland process. Both panels were subjected to an accelerated corrosion test for 24 hours. Note the excessive peeling and rusting on Panel A at the scratch lines and along side seam. Panel B shows no evidence of paint peeling or rusting.

In Inland's continuous-type, spray phosphating process the drums undergo a five-stage operation: washing, hot-water rinse, phosphate coating application and two final rinses. High pressure sprays assure thorough washing and uniform coating for greatest protection against corrosion.



Inland drums, completely phosphate treated for maximum rust protection and resistance to weather, offer more service . . . longer life.

All phosphated drums manufactured by Inland are washed and phosphate coated by Inland's 5-stage spray process. This process, in which the drum is phosphated after forming the parts and welding the shells, results in a surface that is protected with a phosphate coating of optimum thickness on every square inch of the drum . . . inside and out . . . including the side seam.

This means you can safely refill Inland drums more often and can store them outdoors longer without danger of contamination by corrosion. Another reason why you can be sure that Inland containers will do their job exactly as specified.

When you order Inland drums and pails, you are assured of getting containers in the required quantity . . . when you want them . . . to deliver your products "as shipped."

INLAND STEEL CONTAINER COMPANY Member of the INLAND Steel Family

6532 South Menard Avenue, Chicago 38, Illinois
Plants: Chicago • Jersey City • New Orleans
Cleveland & Greenville, Ohio

Full line of steel and stainless steel shipping containers, including galvanized and heavy duty ICC drums.

Washington
Newsletter

CHEMICAL WEEK
March 29, 1958

U. S. scientists—including chemists and chemical engineers— are breaking out of their self-imposed political exile. Switch was signaled at last week's meeting of a "Parliament of Science" in Washington, at which some 125 professional men from the sciences met for no other purpose than to pass resolutions on matters of public policy—deliberately putting themselves into politics, as scientists.

For years, the scientist has insisted he has been out of his environment trying to speak with authority outside the laboratory. The professional scorns those of his brethren who voluntarily involve themselves in political controversies. Now, however, it appears there's been a real change. Significant is the fact that the meeting was backed by the venerable American Academy for the Advancement of Science.

Those attending rated the conference as a success, and they have no doubt that there'll be similar conferences. They see their meeting as the logical result of the conscience-wrestling that scientists have been indulging in since the nuclear physicists produced the A-bomb and the H-bomb. Atomic scientists have been declaring their positions for years. Now there's a forum where all scientists may have their say.

The group opposed creation of a federal department of science, something that has been backed by other scientists and some congressmen. In addition, they:

- Opposed a "West Point of Science"—the sort of federal academy that got attention when the politicians were reacting quickly to the Soviet Sputniks.
- Proposed that tax legislation be enacted to stimulate financial support of scientific research and education—although they specifically left it up to the lawmakers to figure out how this should be done.
- Recommended a continuous minimum annual federal expenditure for basic research—but backed away from the proposal that would fix the recommended level at one-fifth of 1% of U.S. gross national product. (This would have put the figure around $700 million, had the resolution been adopted.)

The scientists discussed many other issues—including how best to keep the President advised on scientific matters. Among the suggestions: creation of a council of scientific advisors, similar to the existing council of economic advisors; strengthening existing scientific organizations to which the President might turn.

Among those attending either as participants or observers: M. King Hubbert, Shell Development Co.; R. Karl Honaman, Bell Labs; Aaron Wexler, Westinghouse Research Laboratory; Leonard A. Paris, Monsanto Chemical Co.; Richard C. Bostwick, Smith, Kline & French; and John T. Goodwin, Corn Industries Research Foundation.

Washington Newsletter

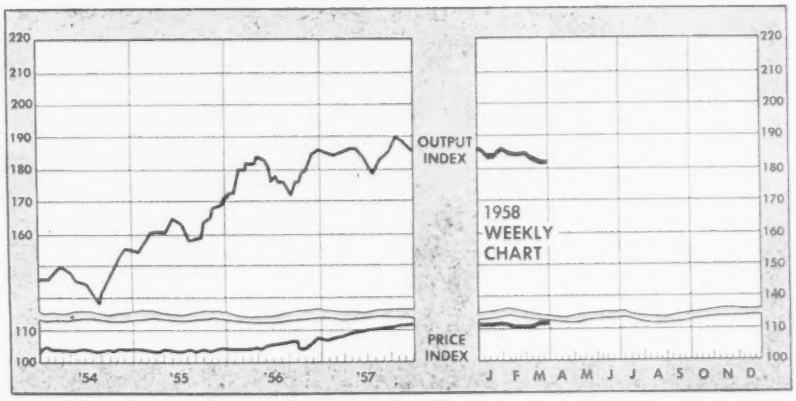
(Continued)

One result of all this already shows in *Science*, the publication of the AAAS. An article by Frank E. Egler, consulting vegetationist, criticizes chemical manufacturers for "manipulating thought" among public utility executives and the public in order to sell weed killers for control of brush along public-utility rights-of-way. Egler notes the interest of the AAAS in the social consequences of science.

•

Recession spurs labor to a fresh look at automation. AFL-CIO's Industrial Union Dept. has invited all of the federation's affiliated unions to send bargaining experts to Washington April 22 for a one-day conference on automation and major technical change. IUD Director Albert Whitehouse says the recession is a timely reason for the meeting, but automation has been and will continue to be a labor problem, no matter what the current state of the economy.

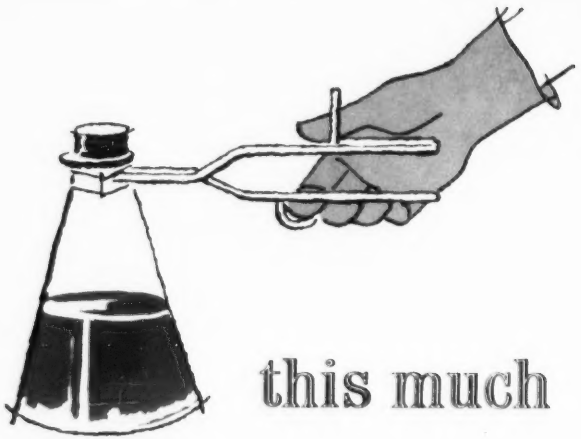
Severance clauses will get more attention. Labor knows it can't stop automation, but unions that paid scant attention to severance protection in past contracts will put fresh emphasis on it now—as a means of cushioning the blow to workers who lose their jobs to machines. The Oil, Chemical and Atomic Workers Union, for example, lists severance as a key objective in all contracts up for negotiation this year.



Business Indicators

WEEKLY	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	183.0	182.0	186.0
Chemical Week wholesale price index (1947=100)	110.9	110.9	108.7
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	39.63	40.48	41.79

MONTHLY Foreign Trade (million dollars)	Exports			Imports		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
Chemicals, total	110.6	115.7	117.1	26.1	20.2	22.0
Coal-tar products	9.4	7.2	9.1	5.5	2.9	3.9
Industrial chemicals	15.0	17.3	19.0	8.1	7.2	6.8



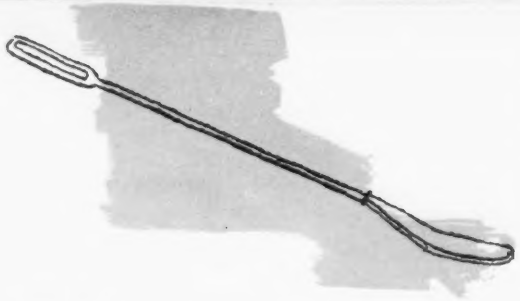
this much Methyl Parathion...

A little Victor methyl parathion puts the *cide* into those pesticides that knock boll weevils and other cotton pickin' pests for a loop.

Cotton farmers and pesticide formulators both bank on the fatal charm of Victor methyl parathion — whether used as a dust, a wettable powder, or an emulsifiable concentrate.

Perhaps you'd like to unload some of your problems . . . make your product more marketable, more economical to produce. You're in the driver's seat, of course, but selecting Victor phosphates, formates, and oxalates can pay dividends—as they have for many others in more than 40 industries. Write on your letterhead for literature of the chemical you are interested in. We'll have data on your desk before you can say, "It *pays* to see Victor."

Victor Chemical Works, Box 271, Chicago 90.



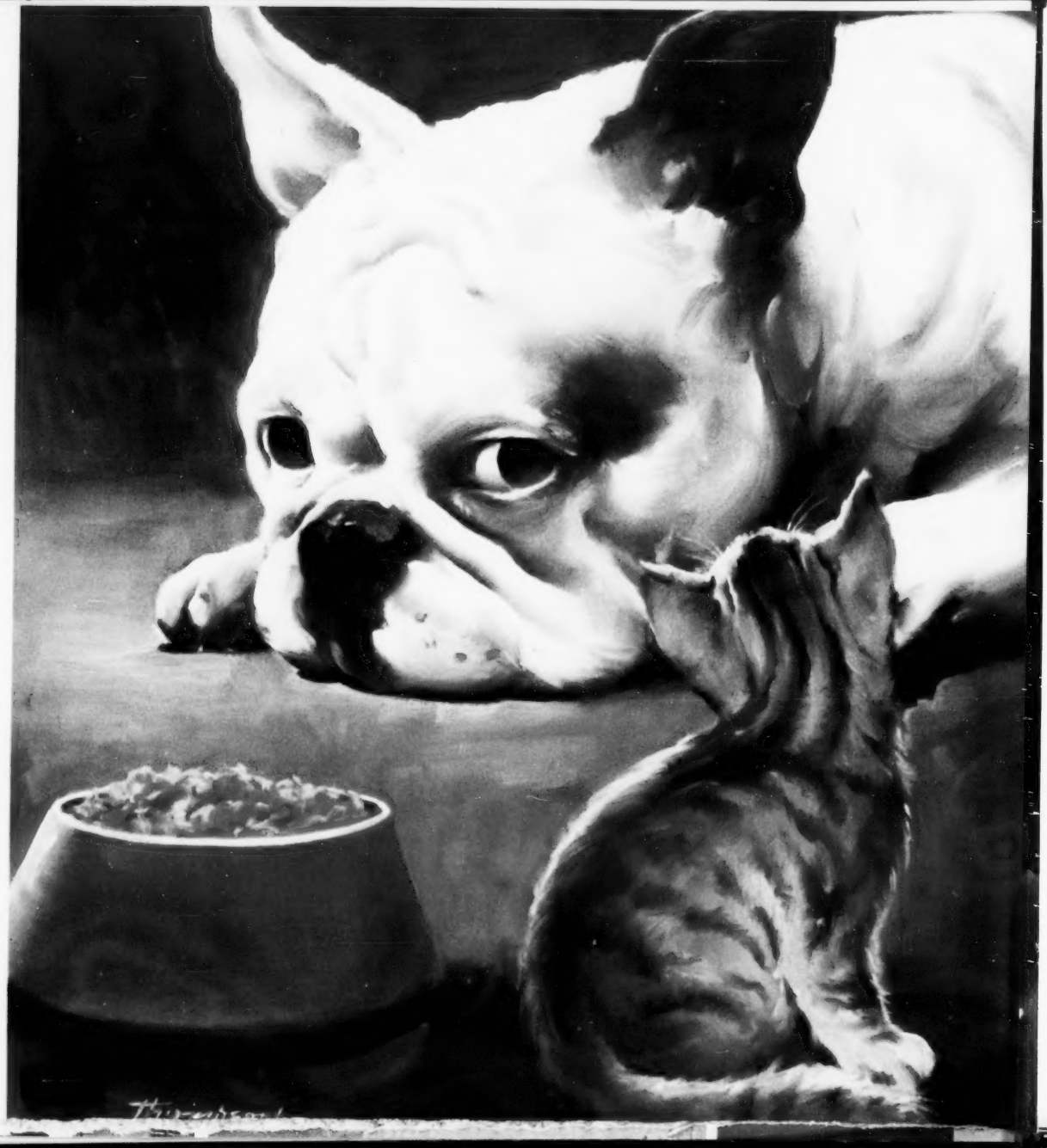
this much SIPP...

A single "pinch" of Victor SIPP *(Sodium Iron Pyrophosphate)* in pet food provides the iron enrichment animals need to stay healthy.

Victor SIPP doesn't "go to the dogs" exclusively, however. Because it is the safest form of iron for foods susceptible to rancidity, Victor SIPP is a popular source for iron enrichment in wheat flour, baby foods, candy, milk drink additives, vitamin tablets, and health preparations.

Why not take a long look at some of *your* products? We don't have any pet theories on how to solve production problems, but we're not letting the cat out of the bag when we tell you Victor phosphates, formates and oxalates have become real favorites for more than 40 industries. A sample of the chemical you'd like will be in your hands before you can say, "It pays to see Victor"—if you'll write on your company letterhead to:
Victor Chemical Works, Box 271, Chicago 90.

VICTOR
Dependable Name in
Chemicals
for 60 Years



ADMINISTRATION

Annual Reports: Changes in the Making

Annual reports that have been bombarding stockholders for the past several weeks show definite, though subtle, signs of new economies in their presentation.

Efforts to economize haven't been drastic; for the most part, savings are reflected in less use of color, lighter stocks of paper or reduced size. There are exceptions, however, where some companies' sizable economy measures are evident.

Commercial Solvents, for example, readily notes a considerable cutback. This year's publication—reporting a 51% earnings drop *(CW, March 15, p. 28)*—has but 14 pages, including covers, compared with last year's 18. Moreover, the report for 1956 included covers printed in five colors, with inside pages embellished with three. This year, only two colors have been used. In addition, printing plates used in previous advertising and promotional pieces have been put to work on covers. The company estimates it pared the cost of its '57 annual report by half.

Extras Cut: Union Carbide was unstinting on its report, but a subsidiary publication, often put out in conjunction with the report, went under the savings knife. The booklet, outlining company products and processes, has usually been sent to UCC's 124,000 stockholders, plus other selected addressees. This year, the company sent out postcards to stockholders, asking if they wanted a copy. Response: 15,000 requests; the company trimmed its printing run considerably, and still mailed to the selected list.

Hooker, too, thinned its report—from 24 pages to 20. And this year, although it published more copies than in '56, Hooker paid less for printing than it did last year. The saving was said to be "several thousand dollars."

Printing economies also resulted in savings for Stauffer. The firm made no special economy effort, but by more detailed negotiation of its printing contract, and by mailing third class rather than first, total cost was less than it was last year.

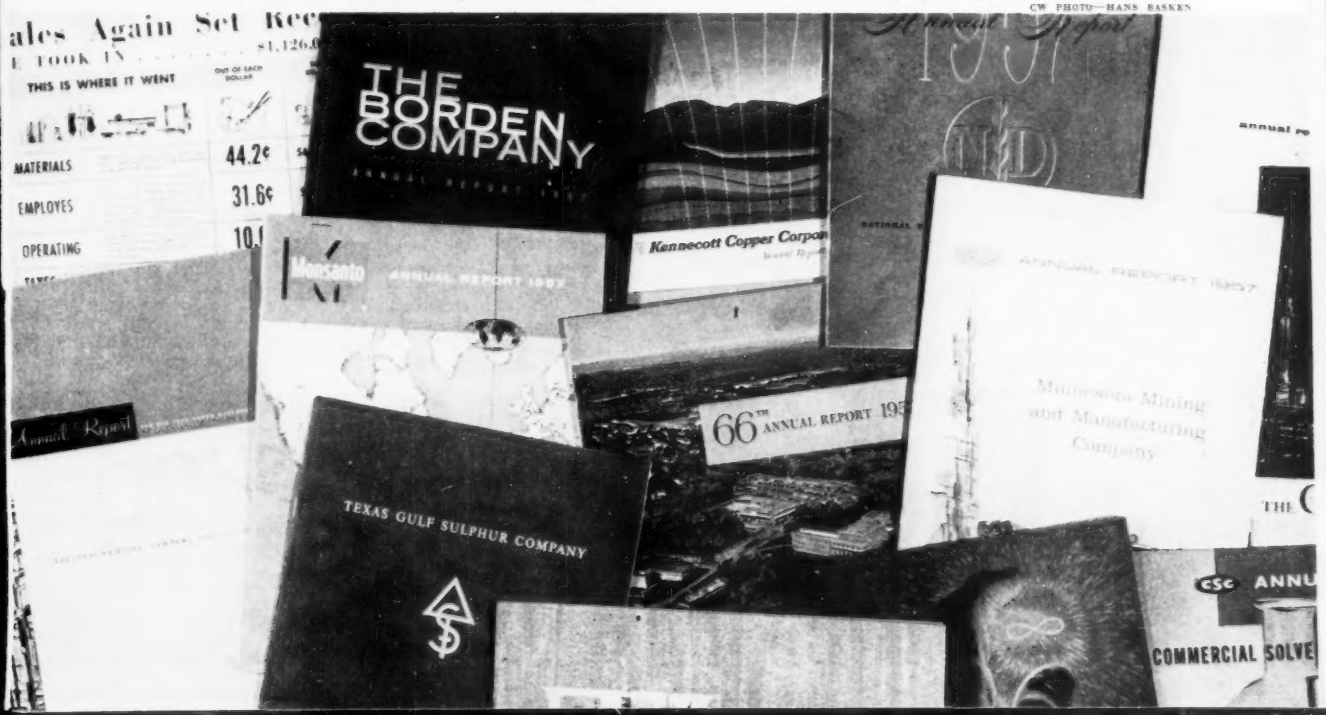
Several other companies report economies, though not by necessity. And still other companies have given careful consideration to holding the cost of their '57 reports in line with the cost of '56 publications. Monsanto indicates that its report, including an annual review written as a colorful, easy-reading report on company activities, did not cost any more this year than the report for '56. National Distillers says unit cost of its book was approximately the same as in '56, though cost would have been less had the company not coated the report's covers with Petrothene, its polyethylene resin.

But if there have been efforts to economize, there have also been efforts to present more readable, clearer reports. In fact, several process companies have taken special pains to help stockholders to better understand company business and the results derived. Besides Monsanto's annual review, a case in point is Chas. Pfizer & Co.'s special report published this year only in the *New York Times*. The '57 report includes an article by John Gunther titled "Inside Pfizer."

Another special effort to help stockholders came from Standard Oil of New Jersey. Its winter issue of *The Lamp*, a publication for employees and stockholders, featured an article bylined by popular essayist Stuart Chase, humorously telling "How to

Welter of annual reports bombarding stockholders show efforts to economize, pose problems in clarity.

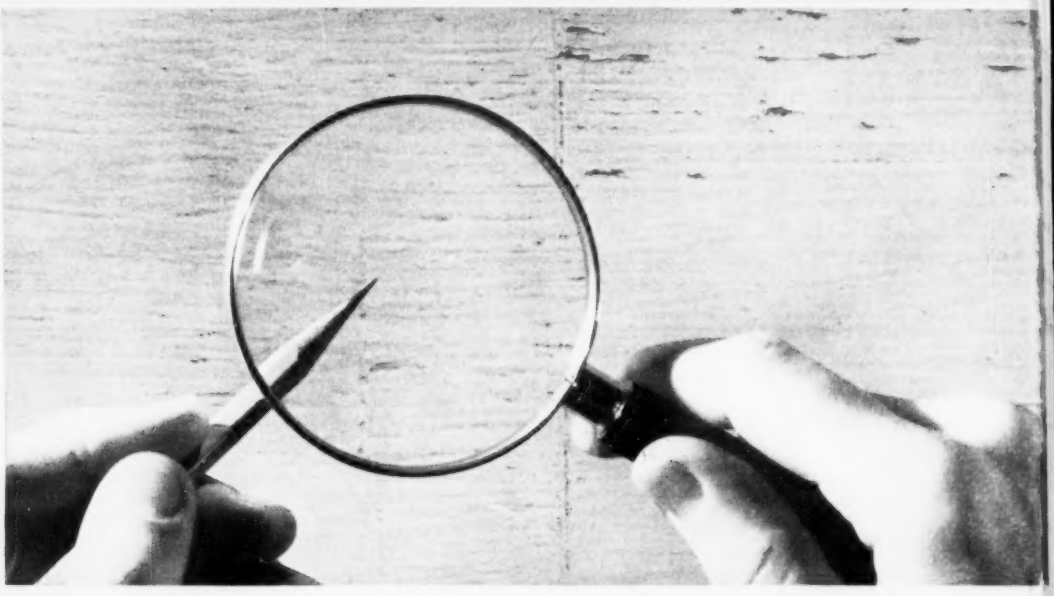
CW PHOTO—HANS BASKEN



MIN CHEMISTRY *at work*

...news briefs

ON THE CREATIVE USE OF M & C PROCESS MATERIALS



*Outside House Paints get new, high-value extender pigments

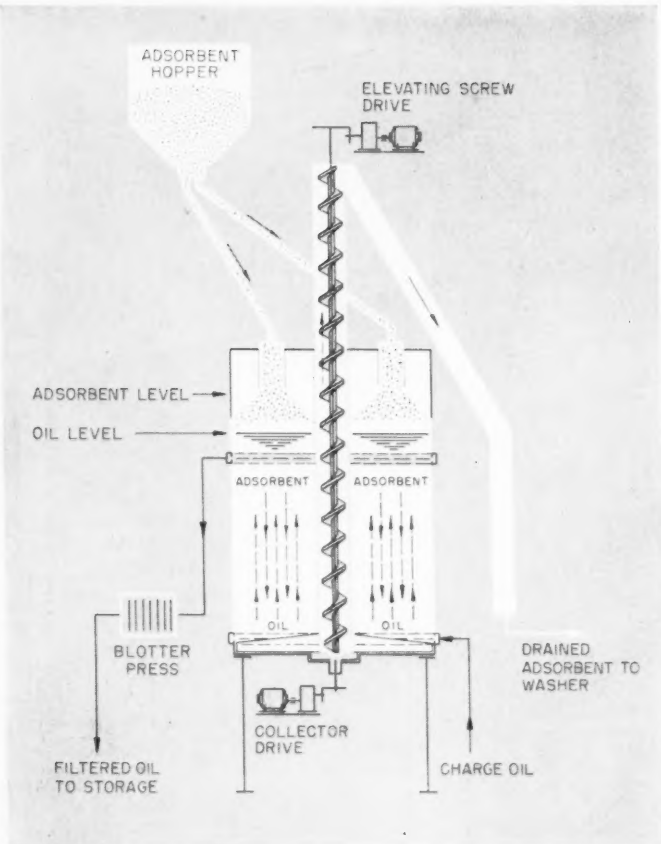
Focusing six years work, ASP's—M & C Aluminum Silicate Pigments—show same solid acceptance in outside house paints they've enjoyed for years in interior coatings. *Test Fence Proved:* excellent exposure rating for general appearance, gloss, chalking, checking, cracking, dirt collection, mildew, flaking. *Documented:* 12 properties of ASP's that give a score of advantages (including lowest costs) to manufacturers and users of outside house paints. This item is "starred" on the coupon. Check it.

*New Laboratory Animal Bedding sets record in sanitation, low cost

One of M & C's newest products is Sterolit—a highly-sorptive, self-sanitizing, odor-killing animal bedding. In a test conducted at National Institutes of Health, in comparison to sawdust in a 3-cage-rack room, Sterolit saved $9.84 a week per room in material and labor. This item is "starred" on the coupon. Check it.

MINERALS & CHEMICAL CORPORATION OF AMERICA

Leaders in creative use of non-metallic minerals



USDA PHOTO

Agricultural Chemists get big assist from granular carrier

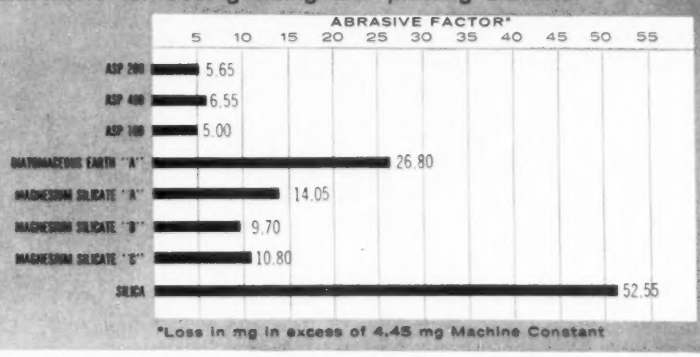
The Imported Fire Ant destroys food, forage and forest . . . attacks livestock . . . even bends mower bars with the tough crust of his mounded colony. Now in the South, he could spread rapidly. M & C—leader in the field of carriers and diluents for control poisons—teamed with toxicant people, came up with granular products to control this marauder.

Continuous Percolation . . . new tool for liquid adsorption / purification processes

Decolorization, purification, and finish-refining take a long stride away from the old batch treatments. With M & C's new patented continuous process, low capital costs, lower operating costs, and up to one-fifth greater yield of improved products per unit of adsorbent may be achieved. Low-cost, reactivatable adsorbents are used in a *continuous* system.

Ink Makers turn to ASP extenders for best grinding and printing behavior

Chart shows results of an abrasion test (details on request). As shown, low-abrasion ASP's promote high grinding speeds, low machine wear, superb "softness" and finish for the printer. ASP's offer half a dozen more pluses, too . . . one of which is low cost.



Use this quick two-check coupon

✓ your product interest . . .

✓ what you need to get tests started . . .

we'll fill your requests immediately.

For more data, see Chemical Materials Catalog Pages 358-362

CHEMICALS

6146 Essex Turnpike, Menlo Park, New Jersey

Export Department: Room 150, Garden State Parkway, Menlo Park, N.J. (Cable Address: "MINCHEM")

MINERALS & CHEMICALS CORPORATION OF AMERICA
6146 Essex Turnpike, Menlo Park, N. J.

I'm interested in:

☐ Outside House Paint extender; ☐ Continuous Percolation;
☐ Ink Makers extenders; ☐ Laboratory Animal Bedding;
☐ Pesticide carriers and diluents

Please send, without obligation:

☐ data; ☐ samples; ☐ prices; ☐ technical representative

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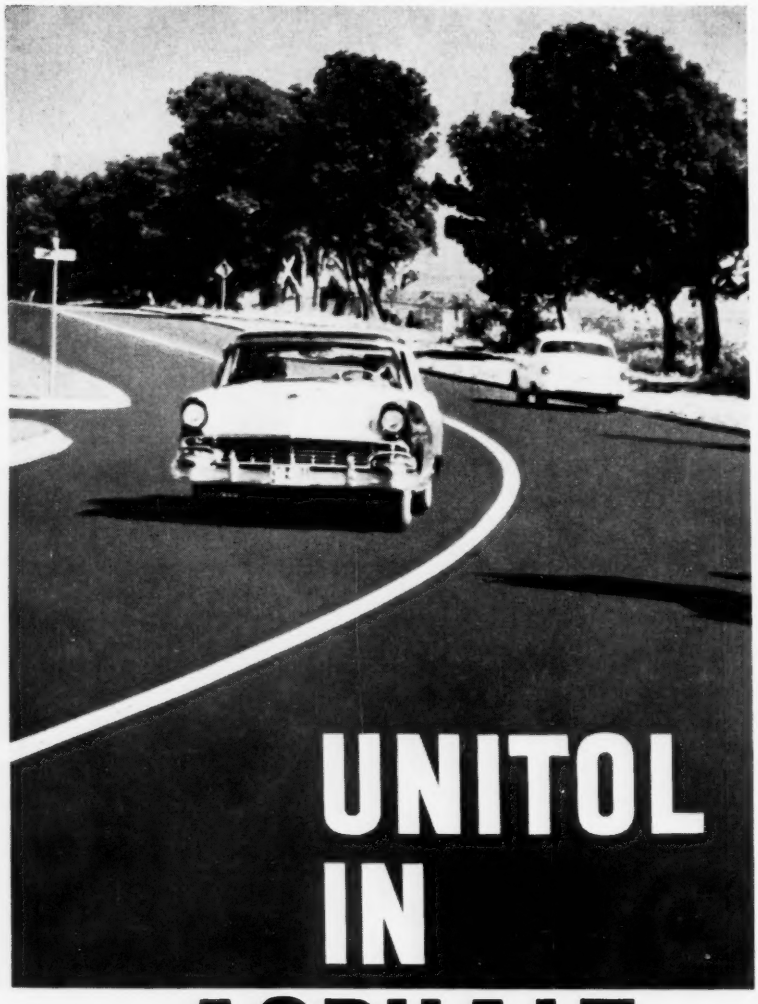
company_____

address_____

city_____ zone_____ state_____



helps make better roads

UNITOL is used as an economical emulsifier in asphalt emulsions having a variety of "break" characteristics. Surfactants made from *UNITOL* are also used in cut-back asphalt to facilitate coating of stone or sand. Eliminates time lost in drying aggregate, insures good bonding.

Perhaps *UNITOL* can help cut your costs. Write for information, samples and prices.

unitol TALL OIL union camp PRODUCTS

Chemical Sales Division
UNION BAG-CAMP PAPER CORPORATION
233 Broadway, New York 7, N. Y.

ADMINISTRATION

Read an Annual Report."

No one can predict how far such economizing and clarification efforts may go; but from results of a *CW* survey, it's clear that many chemical company stockholders are far happier with the results.

LEGAL

Gilsonite Patent Suit: American Gilsonite Co. (Salt Lake City, Utah) has filed a "defense of patent" suit against Carbon Sheet Metal Works (Price, Utah), and Kaiser Steel Corp. (Sunnyside, Utah).

The suit, filed in U.S. district court (Salt Lake City), asks royalty payment for use of insulating techniques involving gilsonite and like materials in coating hot pipes and steam lines.

American Gilsonite—joint affiliate of Standard Oil Co. of California and Barber Oil Corp.—patented this technique Feb. 2, '45. It now charges that Carbon Sheet Metal utilized the invention in work done at Kaiser Steel's Sunnyside coking facilities.

•

Pulp-Waste Tax: Pulpmills discharging more than 20% of their waste liquor into Washington state waterways would be subject to $2.50/gal. tax under a proposal recently filed with the Washington secretary of state by a group called Citizens for Clean Water. The group has until July 3 to obtain 90,319 signatures of registered voters needed to place it on the November election ballot. The law would affect one-third of the pulpmills in the state.

KEY CHANGES

Milton M. Waller, to vice-president and member of the executive committee, Nuclear Corp. of America (New York).

J. S. Bardin, to manager of production, Callery Chemical Co. (Pittsburgh).

James B. Zimmerman, to vice-president and general manager, and **Allen W. Dehis,** to secretary and director, Benzol Products Co. (Newark, N. J.).

C. J. Francisco and **Frank R. Fisher,** to vice-presidents, Sinclair Research Laboratories (New York), wholly owned subsidiary of Sinclair Oil Corp.

TRONA* is basic in the chemistry of high energy fuels and solid propellant oxidants.

Wherever men make ready for outer space...from barren arctic IGY laboratories to tropical ballistic missile blast-offs...Trona chemicals are putting the punch into high energy fuels and other propulsion systems. As the only basic producer of these three important raw materials used in high energy fuels and as solid propellant oxidizers—BORON, LITHIUM and AMMONIUM PERCHLORATE—American Potash & Chemical Corporation has a vital stake in the space age. Recipient of the 14th Annual Chemical Engineering Achievement Award for pioneering work in the atomic age metals, Trona continues in the forefront of basic research and technical development of these vital chemicals and their compounds for high energy and missile applications.

TRONA **American Potash & Chemical Corporation**

3000 West Sixth Street, Los Angeles 54, California
99 Park Avenue, New York 16, New York

Offices: LOS ANGELES, NEW YORK, CHICAGO, SAN FRANCISCO, PORTLAND (Ore.), ATLANTA, COLUMBUS (O.), SHREVEPORT

Plants: LOS ANGELES AND TRONA, CALIFORNIA; HENDERSON, NEVADA; SAN ANTONIO, TEXAS (American Lithium Chemicals, Inc. & San Antonio Chemicals, Inc.); WEST HANOVER, MASSACHUSETTS

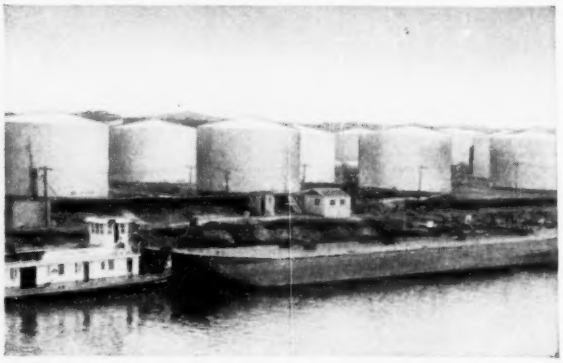
*TRADENAME AND TRADEMARK OF APACO

Recipient of 14th Annual Award for Chemical Engineering Achievement in BORON and LITHIUM

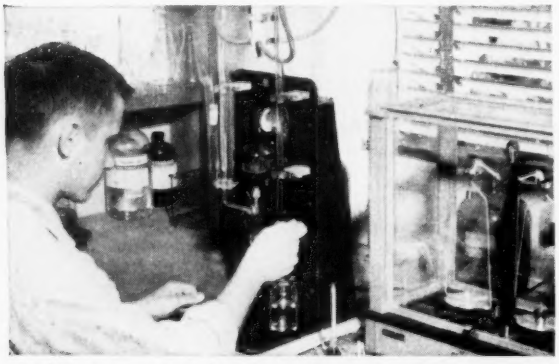
Other Trona chemicals for high energy propulsion: POTASSIUM PERCHLORATE • LITHIUM NITRATE • LITHIUM PERCHLORATE • LITHIUM METAL RUBIDIUM & CESIUM • TRIMETHYL BORATE • TRIMETHOXYBOROXINE • DECABORANE • ELEMENTAL BORON • BORON TRICHLORIDE • BORON TRIBROMIDE

You get these benefits with CARBIDE's Glycols...

Advantages of combination shipments—compartment tank cars and tank trucks; 55-gal. drums in carload or mixed carload lots.



Dependable delivery—nationwide locations of distribution centers assure you of efficient service and continuous supply.



High purity—analysis for water content, shown above, is one of a series of tests run on chemicals before shipment; specifications are actually triple-checked.

Technical assistance—from technical representatives who are chemists and engineers specializing in the solution of your storage, handling, and application problems.

UNION CARBIDE

CHEMICALS

Union Carbide Chemicals Company
Division of Union Carbide Corporation
30 East 42nd Street, New York 17, N. Y.

"Carbowax" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

Ethylene Glycol, Diethylene Glycol, and Triethylene Glycol

Order from Union Carbide Chemicals Company for immediate delivery to your plant site. To meet your requirements—ethylene, diethylene, and triethylene glycols are available in various specification grades.

Ask our Technical Representative for more information—or write for data on ethylene glycol (F-8327); on diethylene glycol, triethylene glycol, and other CARBIDE glycols (F-4763); or on CARBOWAX polyethylene glycols (F-4772). Address—Union Carbide Chemicals Company, Room 328, Dept. S, 30 East 42nd Street, New York 17, New York.

THESE POLYOLS ARE ALSO AVAILABLE IN COMMERCIAL QUANTITIES

• *CARBOWAX Polyethylene Glycols* • *Propylene Glycol* • *Dipropylene Glycol* • *Polypropylene Glycols 150, 425, 1025, and 2025* • *Hexylene Glycol*

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CHEMICAL PROGRESS

NEW SILICONE RUBBER CURES AT ROOM TEMPERATURE;

protects jet aircraft against extreme heat

Working in a field they pioneered, G-E silicone chemists have developed a new type of silicone rubber that cures at room temperature within two minutes or in up to 48 hours if necessary.

The unusual temperature stability of G-E RTV (room-temperature vulcanizing) Silicone Rubber (—70° to 500°F.) makes it ideal for in-place sealing and caulking in high-altitude aircraft and for "potting" electronic assemblies to prevent displacement and vibration. Its phenomenal dimensional accuracy has led to its use in taking dental impressions and making molds for low-cost tooling. Impressions made with it, in atomic laboratory studies of "hot" material, record with extreme accuracy minute dimensional changes and surface imperfections caused by irradiation.

For data on new G-E RTV Silicone Rubber, write Dept. SPD, CHEMICAL and METALLURGICAL DIVISION, General Electric Company, Waterford, N. Y.

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SILICONES • PHENOLICS • LEXAN® POLYCARBONATE RESINS • MOLDED PLASTICS • ELECTRICAL INSULATING MATERIALS • DECORATIVE AND INDUSTRIAL LAMINATES

Gown by Sophie of Saks Fifth Avenue

COLUMBIA-SOUTHERN CHEMICALS HELP SHAPE

IDEAS ON DISPLAY . . . watched every day by the management team building and selling successful products. Their responsibilities range from research and design to marketing and delivery.

These men and women make the profit-creating decisions for going, growing businesses . . . textiles, petroleum products, paper, metals, plastics, food, glass, soap, foils and wraps, chemicals, pharmaceuticals, cosmetics, rubber goods, disinfectants and cleansers. A vital part of their jobs is spotting and applying new trends in materials selection, processing, and handling that produce better goods at lower cost.

The versatile basic chemicals are deeply involved in the style changes continually reshaping almost all products and processes. Columbia-Southern, a leading producer of these essential industrial chemicals, can be a big help to your business as both supplier and technical adviser. Call Columbia-Southern with your next order. You'll soon see why Columbia-Southern chemicals, research, service, and technical assistance help shape profitable futures for products. The Columbia-Southern Chemical Corporation, One Gateway Center, Pittsburgh 22, Pennsylvania. Offices in principal cities. In Canada: Standard Chemical Limited.

$NaHCO_3$—Sodium Bicarbonate • $CaCl_2$—Calcium Chloride • Na_2SO_4—Sodium Sulfate
KOH—Caustic Potash • CCl_4—Carbon Tetrachloride • NH_3—Anhydrous Ammonia

Caustic soda and chlorine, basic Columbia-Southern chemicals, are used throughout many industries . . . textiles, for one.

THE FUTURE FOR SO MANY PRODUCTS

LOOK AT Cl_2—CHLORINE

Highly reactive chlorine's transforming touch creates thousands of molecular regroupings necessary to economical processing of products ranging from solvents to plastics, wonder drugs to refrigerants.

LOOK AT Na_2CO_3—SODA ASH

This versatile alkali serves as basic raw material or essential "refiner" in the manufacture of glass, chemicals, detergents, ferrous and non-ferrous metals, pigments, soap, textiles, paper and many other items.

LOOK AT NaOH—CAUSTIC SODA

Petroleum producers and cellophane manufacturers, textile and rubber makers, businesses by the dozens put caustic soda's voracious appetite to work "eating" away unwanted organic or inorganic compounds.

LOOK AT H_2O_2—HYDROGEN PEROXIDE

One of Columbia-Southern's newer products, this compliant chemical has a range of reactions that permits its use for bleaching paper and textiles, as a rocket propellant, as a reagent in organic syntheses.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION A Subsidiary of Pittsburgh Plate Glass Company

HCl—Muriatic Acid • $TiCl_4$—Titanium Tetrachloride • $Ca(OCl)_2$—Calcium Hypochlorite
Chlorinated Solvents • Chlorinated Benzenes • Agricultural Chemicals • Chrome Chemicals

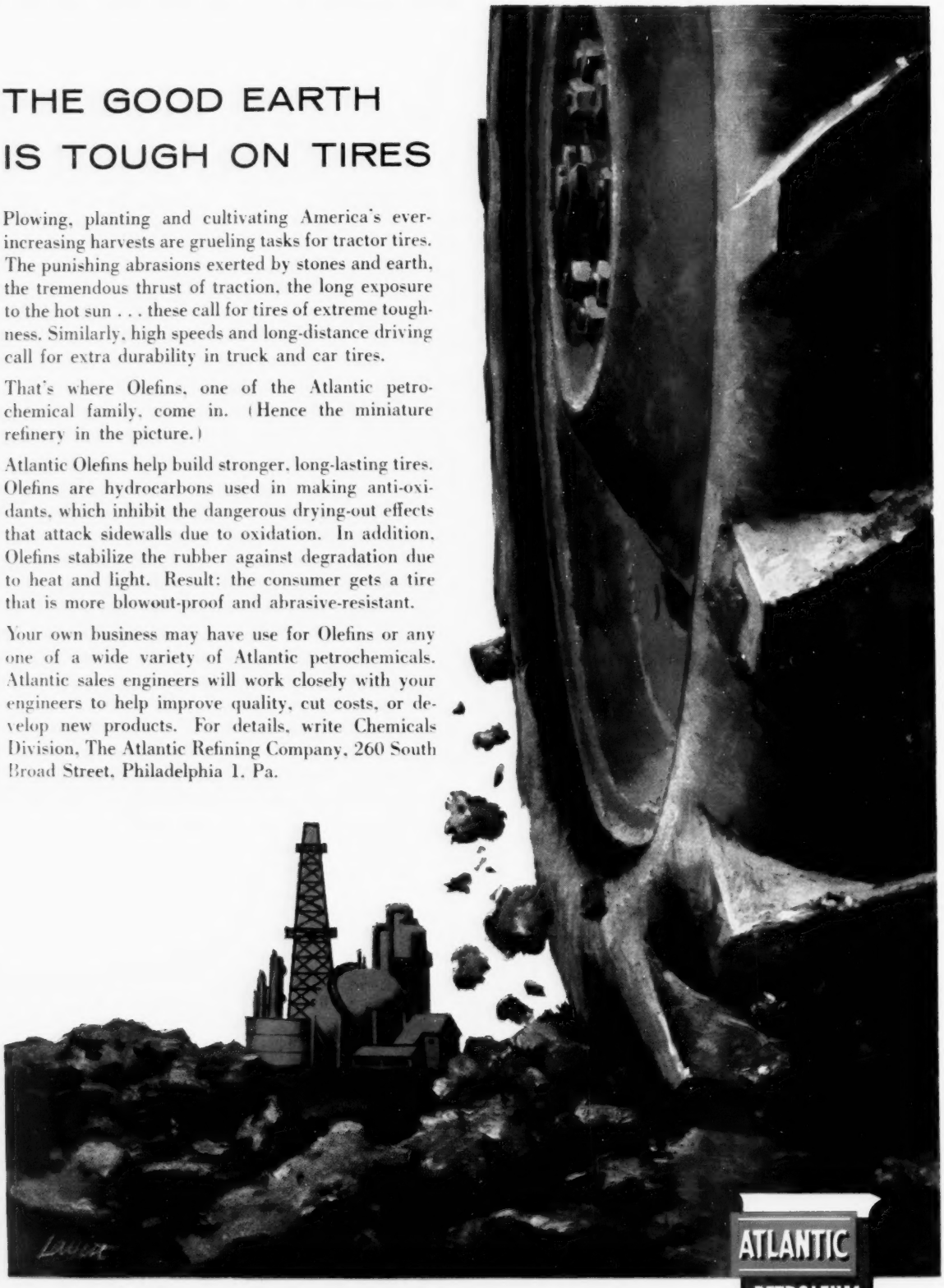
THE GOOD EARTH IS TOUGH ON TIRES

Plowing, planting and cultivating America's ever-increasing harvests are grueling tasks for tractor tires. The punishing abrasions exerted by stones and earth, the tremendous thrust of traction, the long exposure to the hot sun . . . these call for tires of extreme toughness. Similarly, high speeds and long-distance driving call for extra durability in truck and car tires.

That's where Olefins, one of the Atlantic petrochemical family, come in. (Hence the miniature refinery in the picture.)

Atlantic Olefins help build stronger, long-lasting tires. Olefins are hydrocarbons used in making anti-oxidants, which inhibit the dangerous drying-out effects that attack sidewalls due to oxidation. In addition, Olefins stabilize the rubber against degradation due to heat and light. Result: the consumer gets a tire that is more blowout-proof and abrasive-resistant.

Your own business may have use for Olefins or any one of a wide variety of Atlantic petrochemicals. Atlantic sales engineers will work closely with your engineers to help improve quality, cut costs, or develop new products. For details, write Chemicals Division, The Atlantic Refining Company, 260 South Broad Street, Philadelphia 1, Pa.



ATLANTIC PETROLEUM CHEMICALS

Philadelphia • Providence • Charlotte • Chicago
In Canada: Naugatuck Chemicals Division of Dominion Rubber Co., Ltd. • *In Europe:* Atlantic Chemicals S.A.R. Antwerp, Belgium • *In South America:* Atlantic Refining Company of Brazil, Rio de Janeiro

New Fluoro Polymer Weathers Stiff Tests

This week, Du Pont is readying its new Viton elastomer plant at Deepwater, N. J. It's the commercial culmination of a research project begun in '56 to develop a sealing material for aircraft. But researchers have turned up pluses: as the company prepares to open the plant, it's now able to show off a host of other commercial applications for the new elastomer.

Viton, a linear copolymer of vinylidene fluoride and hexafluoropropylene *(CW Technology Newsletter, March 15)*, features resistance to oils, fuels and solvents at 400 F, an asset, Du Pont says, that is matched by no other currently available product.* Also, it's easily handled, is compatible with other elastomers.

Even at the introductory price of $15/lb., there's growing interest in Viton for hose, tire insulation, caulking, paint and the like. Already, Ford Motor Co. is planning to use the new compound as a valve-stem seal in its trucks.

Du Pont, one of the first to go into large-scale production of high-temperature elastomers, hasn't closed the door to continued research for better products. It expects competitive company.

Minnesota Mining now offers nine varieties of fluorinated polymers, under its Kel-F trademark, which include soluble resins, solid plastics, and elastomers. Although it's too soon to tell whether any of these will compete directly with Viton, 3M says they "meet performance standards" in similar applications.

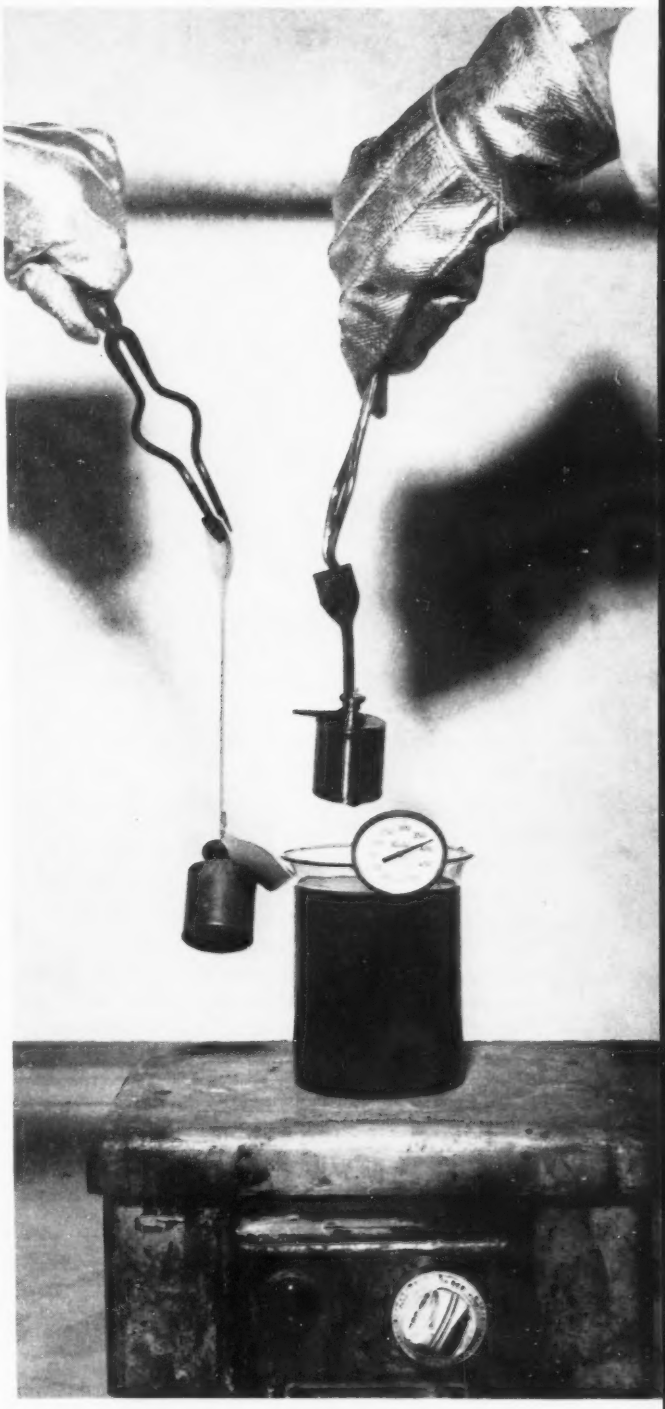
Typical Viton compounds have a brittle point of —47 F, which Du Pont feels is "adequate for most services." Dow Corning's Silastic LS-53 fluorinated silicone *(CW, Sept. 22, '56, p. 38)* has a brittle point of —90 F. However, LS-53 costs $30/lb., has an operational ceiling of 300 F. Air Force specification MIL-R-25988, "Rubber, Fluorinated Silicone, Fluid Resistant"—said to be written around LS-53—will reportedly issue in a few weeks.

And regular all-purpose silicones, available from several manufacturers, feature resistance to phosphate ester hydraulic fluid, which Viton lacks.

There are a number of prospective markets for Viton, markets that depend on upcoming advances in several fields. Auto-brake cups, for example, are now more compact; as their size is reduced, the harder-working cylinders get hotter when braking. Viton may step in, Du Pont believes, when elastomers currently used in this application can no longer stand the combination of brake fluid and extreme heat.

Researchers have also found new applications in aircraft—another good reason why Du Pont feels confident as it puts Viton into commercial production.

*Some plastics have most of these properties, but they do not have Viton's compressibility.



Viton (right) edges elastomer rival in hot-oil test.

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RESEARCH

EXPANSION

• **Six companies,** all interested in the manufacture and conversion of paper, have established the Fiber Products Research Center (Beaver Falls, N. Y.). The sponsors: Brownville Board Co.; The J. P. Lewis Co.; Latex Fiber Industries, Inc.; Milwaukee Lace Paper Co.; Payne-Jones, Inc.; and Smith Lee Co. Inc.

• **Warner-Lambert Pharmaceutical** (Morris Plains, N.J.) has just established the Warner-Lambert Research Institute at the company's headquarters as a step toward consolidation of its major research activities. L. Earle Arnow is president of the new institute.

• **Trubek Laboratories** has completed a new 11,000-sq.ft. research center at East Rutherford, N.J., for studies in odorants, food flavors and industrial intermediates.

• **Nicolet Industries, Inc.** (Florham Park, N.J.), last week dedicated its new 20,000-sq.ft. building containing executive offices and research and development facilities. The labs are for applied studies in asbestos and glass-fiber products.

UNITED PRESS

Springy Surprise

This gold-cadmium bar, which bends and snaps like rubber, will be exhibited at the upcoming Brussels World Fair. The novel alloy is held by Prof. David Lieberman, University of Illinois metallurgist, who is researching its properties.

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PRODUCTION

Equipment Prices: Respite in Their Rise?

Equipment prices have climbed continually since 1950, sharply since the end of '54. But there is evidence this week that chemical process industries' buyers are in for a respite. That's the tenor of replies in a just-completed *CW* survey of equipment makers and chemical firms, echoed in the quotes on this page.

"We were contemplating a 5-10% price increase at the end of '57, but a look at the general business indices made us think better of it; and we decided to pass it by." . . . *pump-maker.*

Consensus is that, because of the current business downturn, prices will remain level for the next months. The big hikes, following last July's steel price increase, turned out to be just about the 5-10% boost predicted *(CW, July 6, '57, p. 40)*. In fact, a leveling of some prices was noticed even then. For example, one chemical firm says that since last July the keenness of competition has kept the prices of process vessels, tanks and some other items of fabricated equipment relatively steady. Several equipment makers say they chose then to absorb the cost of the steel increase, intend to continue absorbing rising costs.

Big Question: The chemical firms that have not curtailed equipment outlays for '58 appear to have picked a good time to buy. Many of the others—whose '58 outlays are reduced—will be watching the situation closely; although they plan to buy less equipment than last year, they emphasize that some purchases have been postponed rather than canceled.

"We're willing to reduce the markup on our equipment—in fact, we are even absorbing all raw-material cost increases—in order to get business." . . . *fabricator.*

There are some signs that lower prices will come soon. Valve prices, for example, have already dropped—in some cases as much as 10%. In fact, one large process industry firm believes there would be a lot of resistance to a rise. Others say that some price shaving is going on in other equipment lines. One company says that it is bidding lower than it did last year on comparable fabricating jobs.

"You have to sharpen your pencil . . . and shave the price a little if you expect to meet competition." . . . *maker of heat exchangers and reactors.*

The escalator clause (tieing equipment prices to steel costs), bane of most equipment buyers, is finding less favor. One equipment maker didn't consider its most recent 5-7% price hike a real increase because it simultaneously removed the escalator clause in favor of firm prices. The rapidly disappearing steel backlog (even plate orders have all but caught up) has likely helped make possible such firm pricing policies. For although deliveries are not up to prewar level, they are now generally faster.

Cloudy Future: Labor cost is the one part of manufacturers' costs that may eventually force high prices of equipment. In spite of the business downturn, the cost of living hasn't come down—it still rises. Should the cost of living continue to go up, labor cost will rise. Just how long the equipment makers can hold prices in the face of this situation is moot.

And compounding their own problem of labor cost is that of their suppliers'—e.g., if steel-industry workers receive a wage increase, it means higher raw material costs for equipment makers.

Past performances make the tie between living cost and labor cost quite clear. Equipment prices rose sharply after the Korean War began, along with the cost of living, then hit a plateau in '51. But even then, there was a slow, upward price drift until the beginning of '55. Then—spurred by the rising cost of living and several steel price increases in the intervening period—the ascent quickened.

According to one equipment firm, prices of assembly-line items are most likely to continue to rise. Fabricators can often do something to hold down total labor cost on custom-designed items, but the stock assembly-line item can't be made without a full working-crew on the assembly line, this firm says.

Another company believes that competition is the deciding factor. Where there is little competition, prices are more likely to rise. And small manufacturers that are not considered competitive with large firms, on a volume basis, are the ones most likely to cut prices first in an effort to get business.

"The price of the chemical equipment we plan to purchase this year should hold fairly steady due to the pressure of competition. However, in some specialized lines, increases may be expected." . . . *chemical firm.*

But most chemical companies, familiar with rapid plant obsolescence, have long followed the policy of buying equipment only as it's needed. As one fabricator puts it: "This is a good time to buy equipment, but you can't expect firms to expand their plants every year just because equipment prices look good."

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Technology
Newsletter

CHEMICAL WEEK
March 29, 1958

Add synthetic fibers as a major use for Goodyear's new Videne polyester (*CW Technology Newsletter, Feb. 22*). Beaunit Mills says it will use the polymer as the starting material for its new 10-million-lbs./year polymer staple fiber plant in Puerto Rico (*CW Business Newsletter, March 8*). Fibers with properties similar to Dacron can be made.

Beaunit plans to begin construction within the next two months, with a June '59 completion date. Site has not been announced, but it may be at Humacao, where Beaunit now makes acetate tricot.

Goodyear will ship the Videne resin from its $9-million plant to be built at Apple Grove, W. Va., will devote about one-half of output to raw material for fibers.

•

Pilot-plant operation of a new process for prussic acid (hydrogen cyanide) has been started by Degussa (Frankfurt, Germany). In the process, ammonia reacts with methane, but without oxygen used in the conventional method. Output will go into production of synthetic fiber intermediates (acrylonitrile, adiponitrile), acrylates, cyanide salts, dyes and fumigants.

•

Heavy water may hold some keys to growth, reproduction and cancer in biological systems, according to Melvin Calvin, professor of chemistry at the University of California (Berkeley). Researchers working with Calvin on the carbon cycle of photosynthesis have been using deuterium as a tracer, find that when chlorella (single-celled green algae) are grown in water containing 33% deuterium, their cells grow about 10 times larger than normal but fail to divide.

After chlorella has had about six months to adapt, slow division will occur even when water contains 60% deuterium. But ability to adapt decreases as percentage of deuterium increases; with 95% deuterium, the capacity to divide ceases.

When deuterium-enriched water was fed to mice, all males tested were incapable of fertilizing normal females. Effect on deuterium-fed females was less, but 40% of some strains were made sterile. Reproductive capacity returned when diet was switched back to ordinary water.

•

Shell Chemical unveiled its new 100% solid-epoxy coating at the 1958 exhibition of the National Assn. of Corrosion Engineers in San Francisco last week. According to Shell, elimination of the solvents gives these advantages: reduced fire hazard during application; elimination of pinholing, because there's no solvent to escape; thicker coatings per pass of spray gun permitted by high solids content.

Shell looks for the new formulation to find use in industrial floor coatings, bonding of new and old concrete, walkways, tank patches. Con-

cerning formulation, Shell says only that solvents are eliminated by "choice and formulation of catalyst and filler."

•

Look for more word soon on the use of Linde's Molecular Sieves as "cages" for accelerators and curing agents in rubber and plastics. The principle is that the sieves undergo dehydration without significant change of crystal structure. The crystals are then interlaced with molecular-size pores. The catalyst can be absorbed into these cavities, and then released, either by displacement by a more strongly absorbed material or by application of heat.

Union Carbide's silicones Division has used this successfully to "cage" a liquid catalyst for vinyl silicone rubber. The catalyst is bound up in the sieve until heat sets it free. Linde has done considerable laboratory and field work to extend this idea to other accelerators, is currently sifting data that it will make public soon.

•

A new method of synthesizing methanol, ethanol and propanol has been developed by the Petroleum Institute of the Russian Academy of Sciences. In the process, waste refinery gases are the source of hydrogen and carbon monoxide starting materials. These low-cost gases are reacted in the presence of solid catalysts at 200 atmospheres pressure, 320-350 C. Reported yield: 90 grams of reaction products per cubic meter of the starting gas mixture.

•

A processing trick that simplifies the production of diols from long-chain fatty acids (e.g., adipic, pimelic, sebacic) is described in a preliminary German patent (DAS 1,023,750) of Farbenfabriken Bayer (Leverkusen). The shortcut applies to the esterification step in which the dioic acid is esterified with an excess of recycled diol at 250 C. To remove water formed by the esterification reaction, the new process utilizes an inert gas stream and, toward the end of the reaction, reduced pressure to remove the last traces of water. This method eliminates the use of combinations such as sulfuric acid and toluene for removing the water as an azeotropic mixture.

Subsequent reduction of the diester with hydrogen at 100-300 atmospheres, 150-250 C. in the presence of a copper-chromite catalyst, yields 90% of the desired diol, 10% higher esters. The latter are recycled to the reduction step to provide a reported total yield of over 99% (based on dioic acid).

•

Synthetic "natural" rubber is no longer a U.S. exclusive, according to a Moscow report in *Chemische Industrie*. The Soviets say they have started pilot-plant production of "high grade" *cis* 1,4 polyisoprene—which they call SKL—containing 70% *cis* and 20% *trans* 1,4 compound. Of the remaining 10%, 7-8% is 3,4 and about 2% is 1,2 isomer.

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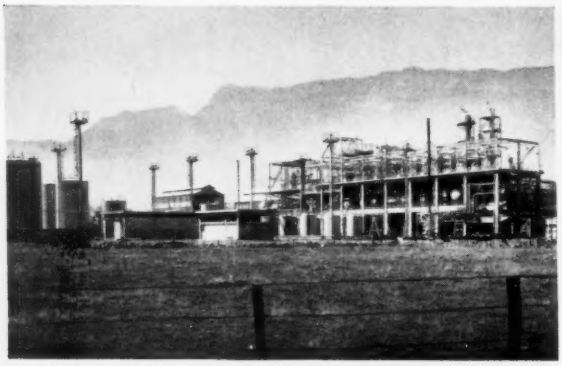

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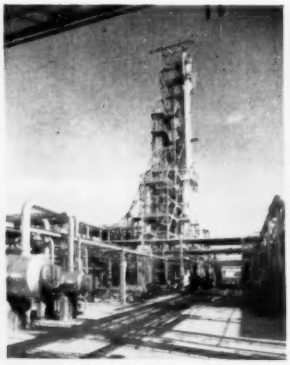
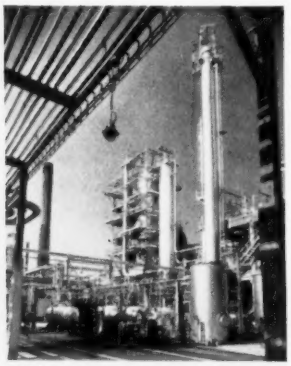


Ethylene Plant



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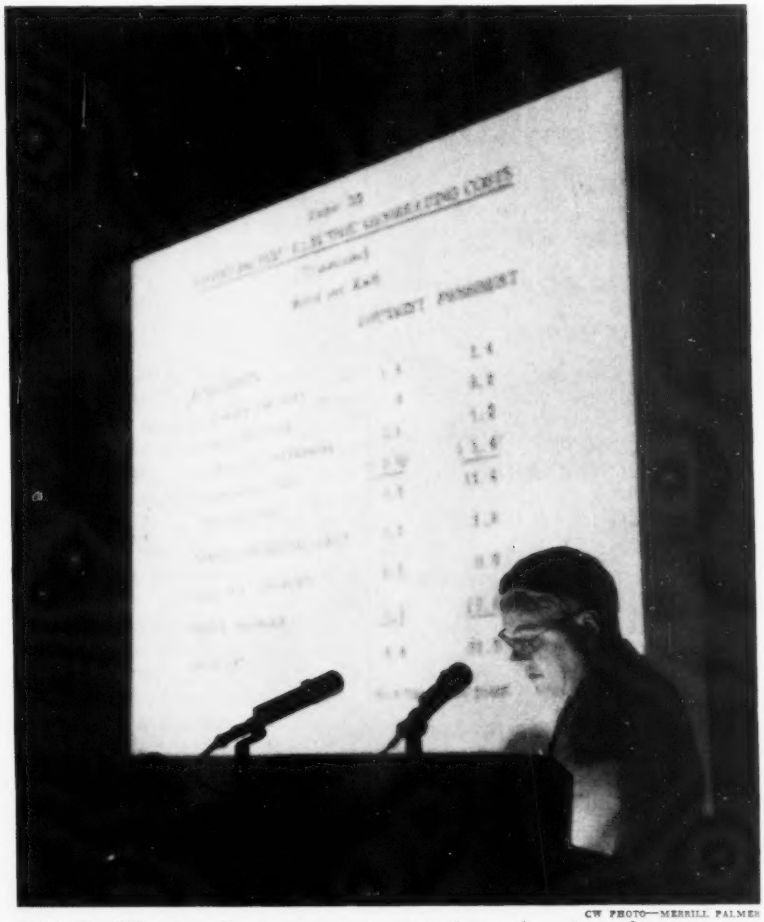


CW PHOTO—MERRILL PALMER

AEC's Roddis: Despite poor power-cost data, there's a clear . . .

Call for Cheap Atom Fuel

Management men took a critical look at America's young nuclear industry under the dollar sign's harsh spotlight last week at the big, four-part atomic parley in Chicago.* And they saw that lower-cost nuclear fuels are the key to economic atomic electric power.

The Atomic Energy Management Conference, cosponsored by Atomic Industrial Forum and National Industrial Conference Board, was particularly economics-oriented. Industry leaders were somewhat handicapped—as the Atomic Energy Commission's Louis Roddis, Jr. (*above*), put it, they had to guess at nuclear power costs. Nevertheless, they sailed into issues of nuclear costs, markets, indemnities and the Atomic Energy Act.

Outlining the principal objectives of the meetings, one conferee remarked, "Nuclear energy has been something of a lovingly coddled wonder child, performing remarkable technical feats and getting a lot of applause but little money. Now, after 13 prodigal years, we feel it's fast reaching the age when it must begin to earn its keep. The industry's dollar-and-cents examination here is the first step in that direction."

CPI Stake: The consensus of management meeting-goers: 1958 marks the economic coming of age of the nuclear industry and its industrial by-products.

In mapping the industry's route to economic self-sufficiency, the three-day meeting gave particular attention to the nuclear fuel cycle—the special preserve of the CPI. It's here that atomic management men feel they can do the most toward slashing nuclear power costs.

S. B. Roboff, of Sylvania-Corning Nuclear, speaking at a panel session on the reduction of nuclear power costs, put it this way: "We've made some handsome advances in cost reductions in every phase of the nuclear power plant—except the fuel cycle. The simple explanation is that there hasn't been an operational fuel cycle until now. But now that we're finally coming up with one, our engineering efforts must be devoted to cutting fuel costs—otherwise, there won't be any such thing as competitive nuclear power."

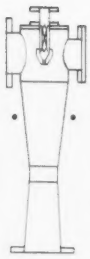
At the same session, W. B. Lewis, of Atomic Energy of Canada, Ltd., reported some of the engineering experiments toward getting the best out of reactor fuels. These indicate a strong possibility that high burnup can be attained in low-cost uranium dioxide fuel (*CW Technology Newsletter, March 22*). Dense, sintered UO_2 may withstand burnup as high as 10,000 megawatt-days/ton, can be fabricated into clad fuel elements for under $30/lb. If realized in commercial practice, this combination would allow a strikingly economic total fueling cost of under 1.5 mills/kwh.

Part of the hoped-for savings are expected to come from simpler and cheaper fuel-cladding techniques. Recent test results, Lewis says, suggest that aluminum-nickel alloy may replace the more costly Zircaloy now commonly used.

Not by Burnup Alone: At a later panel session, Battelle Memorial Institute's B.W. Dunnington predicted a gradual increase in permissible burnup of nuclear fuels as new materials are developed and as old ones are modified.

But optimum use of fuels, he stressed, does not depend on burnup alone. It's also important to know how burnup is influenced by other variables—such as alloy additions,

*Running concurrently: the fourth Nuclear Engineering and Science Conferences, the Atomic Energy Management Conference, the Sixth Hot Laboratory and Equipment Conference, The Atomfair trade show.



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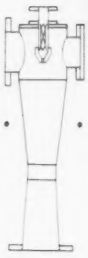

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OVER A CENTURY OF INDUSTRIAL PLANT DESIGN EXPERIENCE

thickness and strength of claddings, fuel enrichment, reactor temperature —that are under the control of the reactor designer.

Another important phase of the nuclear fuel cycle—fuel reprocessing—was highlighted by J. W. Ullman, of Oak Ridge National Laboratory. His prediction: the all-aqueous approach to fuel reprocessing will predominate for some years to come. Reasons: it's familiar and easily adaptable.

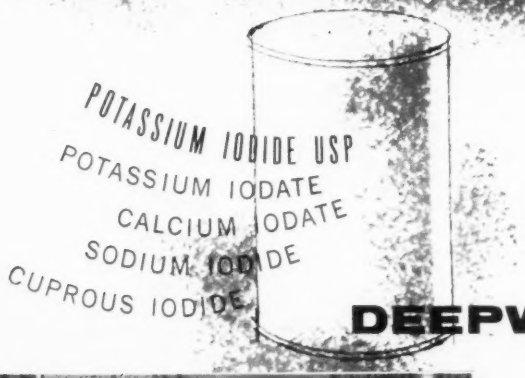
As for ways of reducing reprocessing costs, Ullman suggested, among other promising remedies, standardization of fuel elements (*CW, Jan. 18, p. 27*) development of more corrosion-resistant process equipment, development of fuel elements that need not be treated chemically to remove cladding, development of markets for fission and transmutation products.

R. M. Chappel, of Vitro Corp., predicted that high-level radioactive-waste disposal will not be a significant obstacle to economic nuclear power —provided well-integrated reactor-reprocessing complexes are established. Cost of transporting wastes to disposal areas is an important consideration, he said. And this means that a chemical reprocessing plant handling large quantities of radioactive waste must have adequate waste-disposal areas within economic shipping distances.

Outside Interests: Though the commercial aspect of nuclear power was the dominant theme at most of the panel sessions, the management conferees didn't overlook any of the related nuclear enterprises that contribute to the industry's economic well being. Of special interest to marketing men were the sessions dealing with market potentials of atomic materials — zirconium, beryllium, thorium, rare earths, tantalum and niobium— for industrial applications outside the nuclear field.

The foreign market for nuclear products and know-how was explored by representatives of equipment and engineering firms. Tracerlab's H. S. Myers reported that the formation of the European "Common Market" and Euratom has made selling nuclear instruments on the European marketplace highly competitive. And Ralph Brown, of Vitro International, outlined some of the difficult problems of selling engineering services abroad where industry is relatively unfamiliar with the engineer-architect concept.

The Patterson Conaform® VACUUM DRYER



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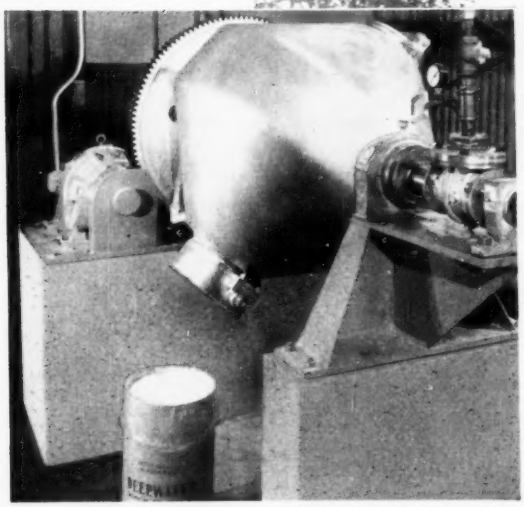

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Market Newsletter

CHEMICAL WEEK
March 29, 1958

More evidence that copper prices may have touched bottom. U.S. custom smelters, for instance, have hiked prices ½¢/lb.—the first such move since early November. London copper values are higher again, and the major Belgian Congo producer who raised prices twice in one week recently (*CW Market Newsletter, March 15*), posted an additional increase. This, say traders, effectively plugs up one more source of "bargain-priced" metal.

No word yet whether U.S. primary producers will soon move above their current 25¢/lb., but it's plain that such action is being contemplated. Likely to tip the decision in favor of an increase: the higher smelters' price (now 23½¢); anticipated further cutbacks in U.S. and foreign mine production; possibility that the U.S. import duty of 1.7¢/lb. (suspended until July 1) will be reapplied on that date.

•

Nickel is now plentiful. The flip-flop from scarcity to satiety in less than a year is underscored by International Nickel Co. of Canada's decision to curtail output by 10%. Nickel production, says the world's largest producer Inco, is substantially "in excess" of total market demand.

The company's cutback will amount to about 1,250 tons/month, and, unless nickel demand picks up, may be just a forerunner of further curtailment. Unsold nickel stocks (private and U.S. government) are said to be accumulating rapidly and will soon total 50,000 tons. Inco's scheduled '58 deliveries to the stockpile have been put off for another year because of "excessive accumulations by the government," reports a company spokesman.

•

Acetate staple and tow prices are higher by 1-2¢/lb. Celanese last week set its regular staple of 3-, 5.5-, and 8-denier varieties up 2¢/lb. (to 36¢), and increased 2-, 12-, and 17-denier regular staple 1¢, to 36¢/lb. Regular tow (3-, 5.5-, and 8-denier), and nontextile acetate fiber are both up 1¢/lb. to 37¢ and 28¢/lb., respectively.

Changes apply to bright and dull staple and tow, but prices of Celanese's specialty fibers (Celacloud and Celafil) are not being raised.

•

Climbing costs, which boosted feed-grade dicalcium phosphate tags earlier this year, will have a similar effect on prices of other grades. On April 1, higher spot and contract quotes will prevail on anhydrous and USP dical material, on anhydrous and hydrated monocalcium phosphate, and on calcium pyrophosphate.

Tags on the di and mono items go up 25¢/cwt., and on the pyro, 35¢. Typical upcoming prices: bagged anhydrous dicalcium phosphate (c.l., works, freight equalized), $9.55/cwt.; USP, same basis, $8.25. Anhydrous mono goes up to $9.50/cwt., hydrated to $7.45, and c.l. quantities of pyro will cost $14.65/cwt.

Reductions on some cadmium pigment prices are being posted this week, for two reasons: general fall-off in demand; recent weakening in raw-material selenium schedules (*CW Market Newsletter, March 15*). Pressured downward 3-10¢/lb. are cadmium-selenide and cadmium-mercury lithopones. The 3¢/lb. drop applies to cadmium-mercury deep orange (now $1.61/lb.) and to cadmium-selenide light and deep orange (reduced to $1.54 and $1.68/lb., respectively).

•

Chalk up completion of another vinyl expansion. Word from Solvay Process (Allied) is that construction more than doubling vinyl chloride monomer capacity at its Moundsville, W. Va., plant has been completed. (The announcement follows closely last week's report that Ethyl is now operating its newly built monomer installation at Baton Rouge.)

No official figures are available on the total capacity of the now-expanded Solvay Process plant, but estimates pegged its original production at about 50 million lbs./year (*CW, Nov. 16, '57, p. 71*).

Solvay is rated as the country's top monomer merchant, is contract-tied to a number of smaller polyvinyl chloride producers.

•

Make it six new sulfuric acid plants for Du Pont. Latest in the company's post-World War II program of modernizing sulfuric manufacturing facilities is the just-in plant at Ecorse, Mich. No capacity figures are given here either, but the new plant can produce "twice as much" acid as Du Pont's two old units in the area (Ecorse, and Toledo, O.) that are now being dismantled.

Du Pont concedes that "there is excess sulfuric capacity in the Eastern half of the country," but believes it is essential to provide the "best possible product and service" to customers in the area.

•

Look for a revival of LP-gas industry interest in refrigeration. Whirlpool, which recently bought the gas-burning Servel refrigerator, is planning to reintroduce the box this spring. And slated to tell the industry how to "capitalize" on LPG's load building potential is Whirlpool President Elisha Gray II. He'll address the marketers' section at the Liquefied Petroleum Gas Assn.'s 27th national convention and trade show (May 4-7) in Chicago.

SELECTED PRICE CHANGES — WEEK ENDING MARCH 24, 1958

DOWN	Change	New Price
Cadmium-mercury lithopone, orange deep shade, bbls., frt. alld. east of Rockies	$0.03	$ 1.61
Cadmium-mercury lithopone, red light shade, bbls., same basis	0.05	1.68
Platinum metal, works, oz.	3.00	69.00
Tin metal (Straits)	0.0125	0.94

All prices per pound unless quantity stated.

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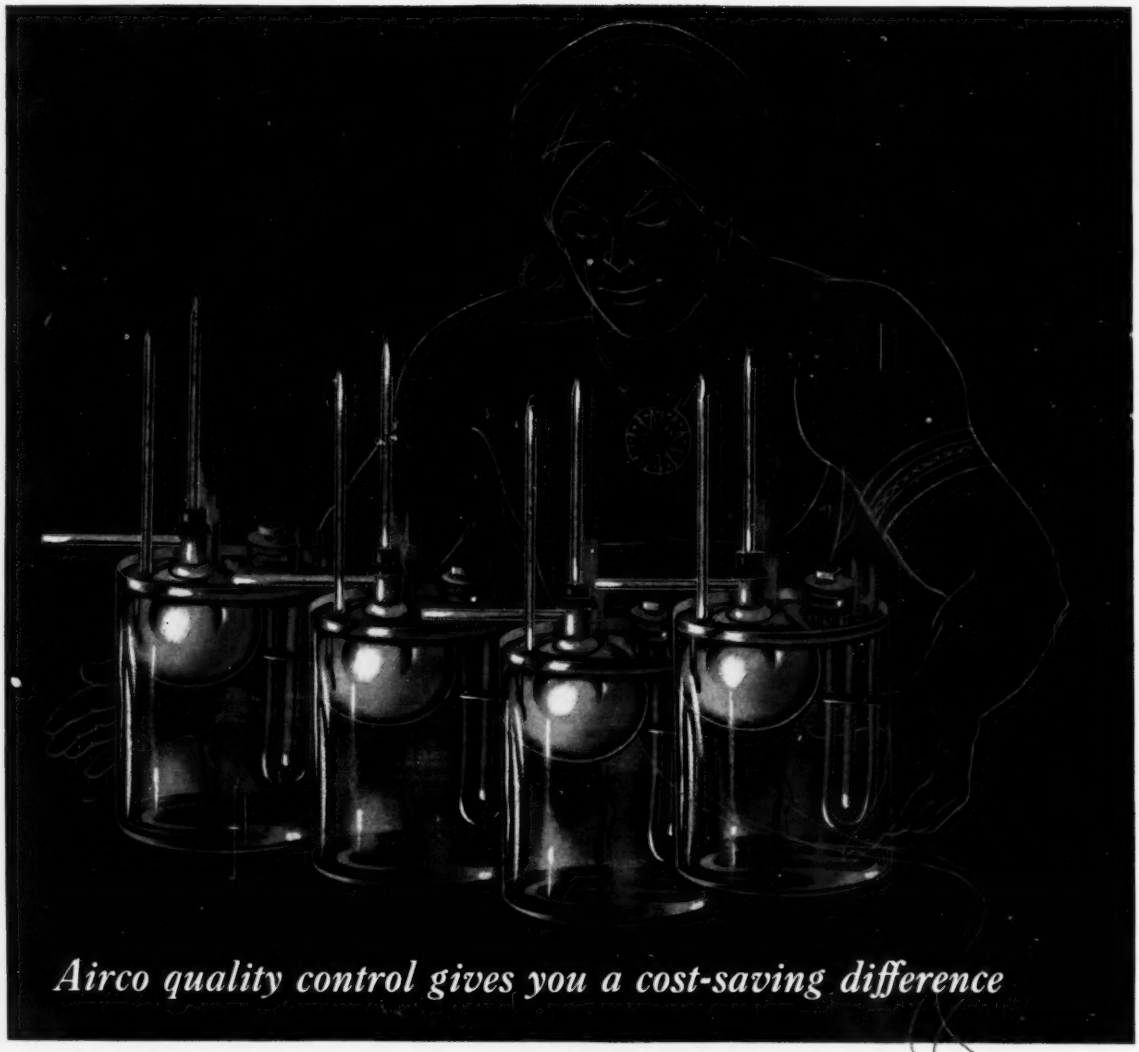

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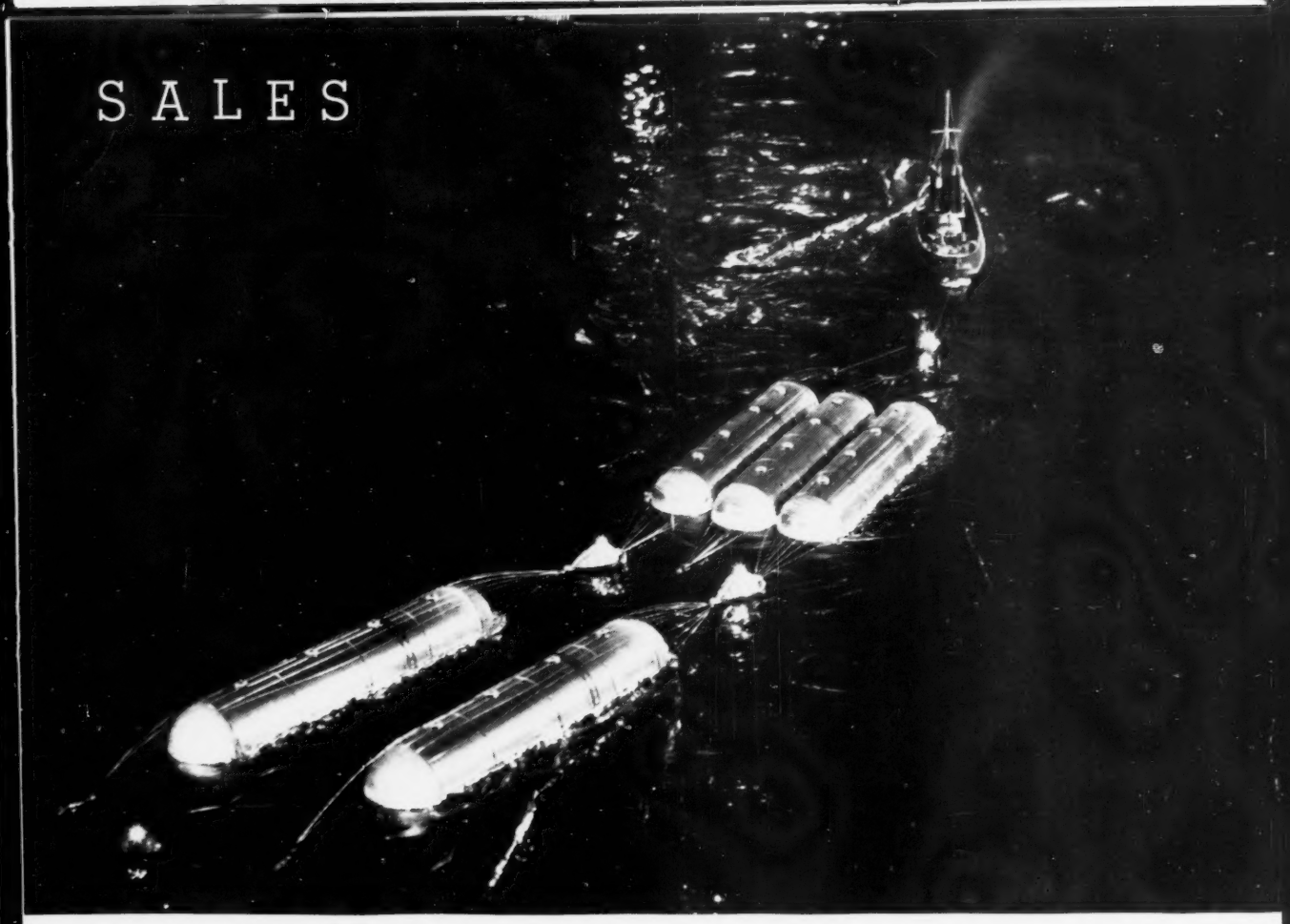

Sausage-shaped plastic tubes, similar to these German models, will bid for world waterway traffic.

Plastic Barges—Next to Carry Chemicals?

By 1960, collapsible, tubular plastic "barges" for transporting chemicals, oil and other materials may be a common sight on the world's waterways. Spurred by promises of large savings in transportation costs and equipment investment, interest both here and abroad is now reaching high pitch.

• Reichhold Chemicals, U.S. agent for German inventor E.H. Doerpinghaus, will import several of his polyvinylchloride "barges" within the next six months. The firm will test-demonstrate and arrange to have the units produced domestically. And by '59 or '60, it will be using the bags for shipping plasticizers from its Tuscaloosa plant, foresees use of the plastic barges in shipping sulfur, glycerine, phenol, sulfuric acid and formaldehyde.

• In Germany, following successful inland waterway tests of a 124-ft.-long, 7.5-ft.-diameter bag, Doerpinghaus has given production rights to International Container Bau GmbH. and Deutsche Novo Tank, GmbH. Containers with over 1,000-ton capacity will be built, and special sea tests will be run.

Chemische Werke is considering the bags for shipping plastic molding powders; Glasurit Werke, for transporting and storing varnish solvents.

• U.S. Rubber Co., by the end of the year, will probably offer a 400- to 600-ft.-long semirigid rubber container on a commercial basis.

• In England, Dracone Development Ltd., is now constructing a 75-ft.-long, 6-ft.-diameter plastic container with a 40-ton capacity load, will shortly sea-test it. A larger bag, 360-ft. long, 13 ft. in diameter, is scheduled for testing later this year. Material used: rubberized nylon.

• Matson Navigation Co. (San Francisco) has plans on drawing boards for nonrigid plastic bags. The containers will vary in capacity from 1,000 to 15,000 tons; they will carry only liquid products, will be towed completely submerged.

Germany's Barges: The smallest unit to be manufactured by the Germans will probably have a capacity of 50 tons; the largest will hold 10,000 tons or more.

In Doerpinghaus' design, these cylindrical containers have air chambers for balance and shock protection. They will not be subdivided into compartments, since Doerpinghaus believes it's cheaper to tow several containers together.

Construction materials for the synthetic barges will undoubtedly be reinforced plastics. Polyvinylchloride, polyethylene, polyamides, polyurethane and synthetic rubber will all figure prominently. Choice of material will depend on the liquid chemical that will be hauled in the bags.

The number of bags towed by one tug boat will depend only on the boat and the river conditions. The con-

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CORPS OF ENGINEERS U. S. ARMY WASHINGTON, D.C.

British prototype barge successfully passed sea trials last summer.

tainers may be towed in single file, a parallel row, or in packets.

Heavy traffic is considered no handicap, since any hard impact would be hydraulically distributed over the flexible barges. Furthermore, some containers will be enclosed in steel nets, providing protection and points to which towlines can be fastened. Leaks can be temporarily repaired with stoppers and plugs, later by patching.

British Developments: In England, Prof. W.R. Hawthorne, leader of plastic flexible-container research and director of newly formed Dracone Development, told *CW* that barge development has been "most encouraging."

Successful tests have been conducted on both single- and multiple-compartment bags made of rubberized nylon. When full, the containers are about 85% submerged, but appear to ride heavy seas satisfactorily. Snaking and kinking problems have been solved. The British team is now working on the problem of carrying liquids with a density greater than that of water. Buoyancy chambers will probably be the answer.

Cost Savings: Savings and low investment costs are the reasons why worldwide attention is focusing on development of the giant containers. Hawthorne estimates that the bags will cost one-seventh that of a conventional oil tanker of comparable capacity. Doerpinghaus thinks the cost will be one-twentieth to one tenth that of tankers, depending on

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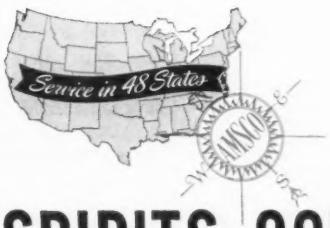

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the capacity involved—a model with 500-ton capacity will cost about $11,000. Life expectancy will equal that of the plastics used.

Operating costs will be low, Doerpinghaus claims. Both liquids and powder materials may be pumped out by conventional methods. When not in use, the containers may be rolled up and stored. Because of light weight (1% of load capacity), the units may be stored on the tugboat or shipped back separately, thus eliminating expensive dead-freight runs.

In some cases, it may be practical to dispose of the containers after completing a haul. Minimum needs for operating personnel and low harbor and canal fees also point to low operating costs. Over-all, operating costs may be 50% that of tankers, says Doerpinghaus.

U.S. Push: To take full advantage of cheap water transportation rates, chemical companies must ship in bulk quantities because of the large capacity (500-1,500 tons) of the nation's barges. Henry Reichhold, president of Reichhold Chemicals, is waxing enthusiastic about the usage of small, 50-500-ton plastic barges on the nation's inland waterways to supplement, rather than compete with, conventional barges.

Reichhold asserts that plastic flexible containers are the answer for chemical firms shipping in small or intermediate volumes. The initial cost of manufacturing these containers will be so much less than conventional tankers or barges that even small chemical firms will be able to take advantage of water transportation, he believes. Furthermore, since load capacity of the bags will vary from 50 tons to 10,000 tons, customers will be able to ship a wider range of quantities.

Ahead: Plastic barges still have some hurdles to clear. For one thing, approval by federal regulatory agencies must be obtained. (Preliminary discussions with government officials, says Reichhold, have been encouraging.) And the units will have to prove themselves capable of coping with underwater obstructions and snags. Worldwide optimism about plastic barge shipping, however, indicates that the problems will be overcome. And it's a fairly safe bet that plastic barges will soon be a factor in chemical and petroleum transportation.

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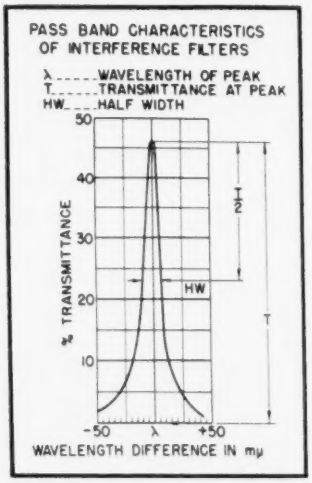

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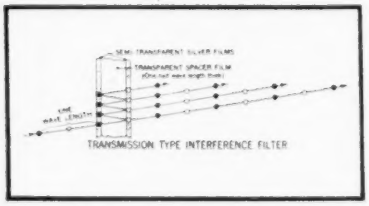

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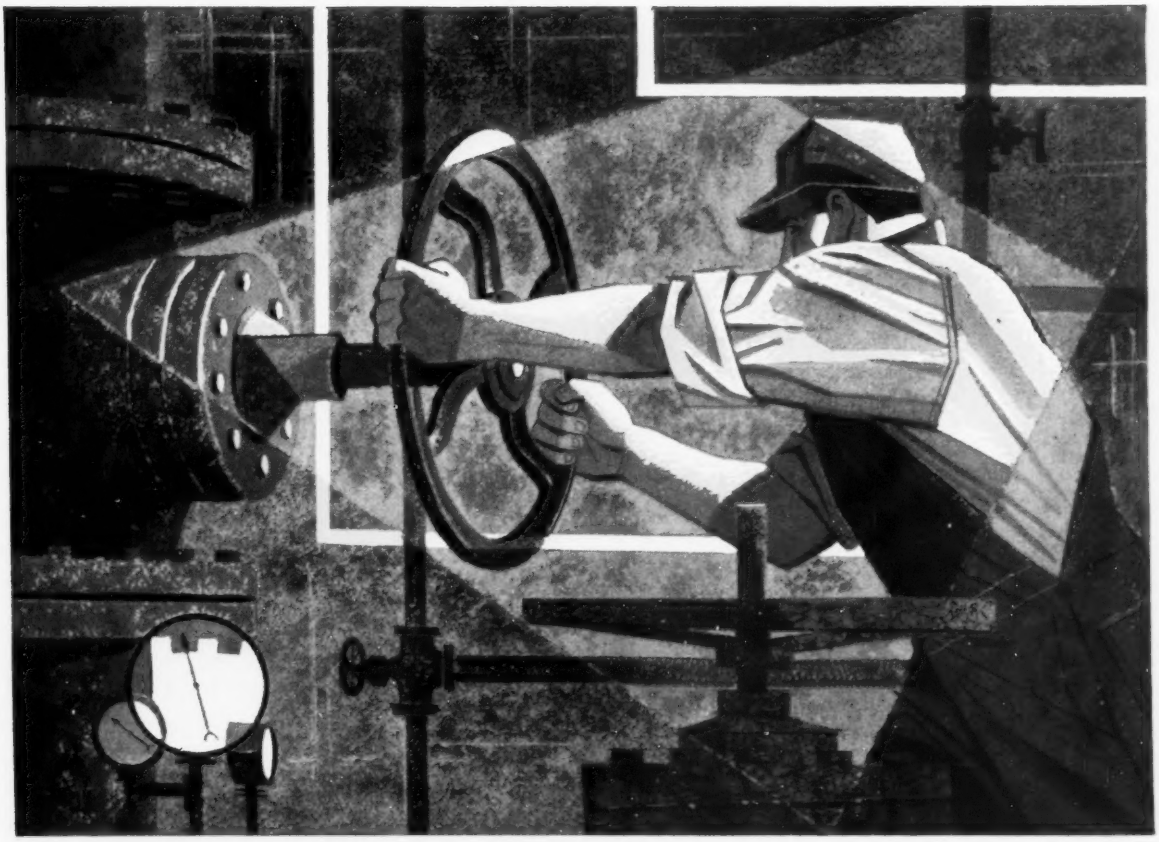

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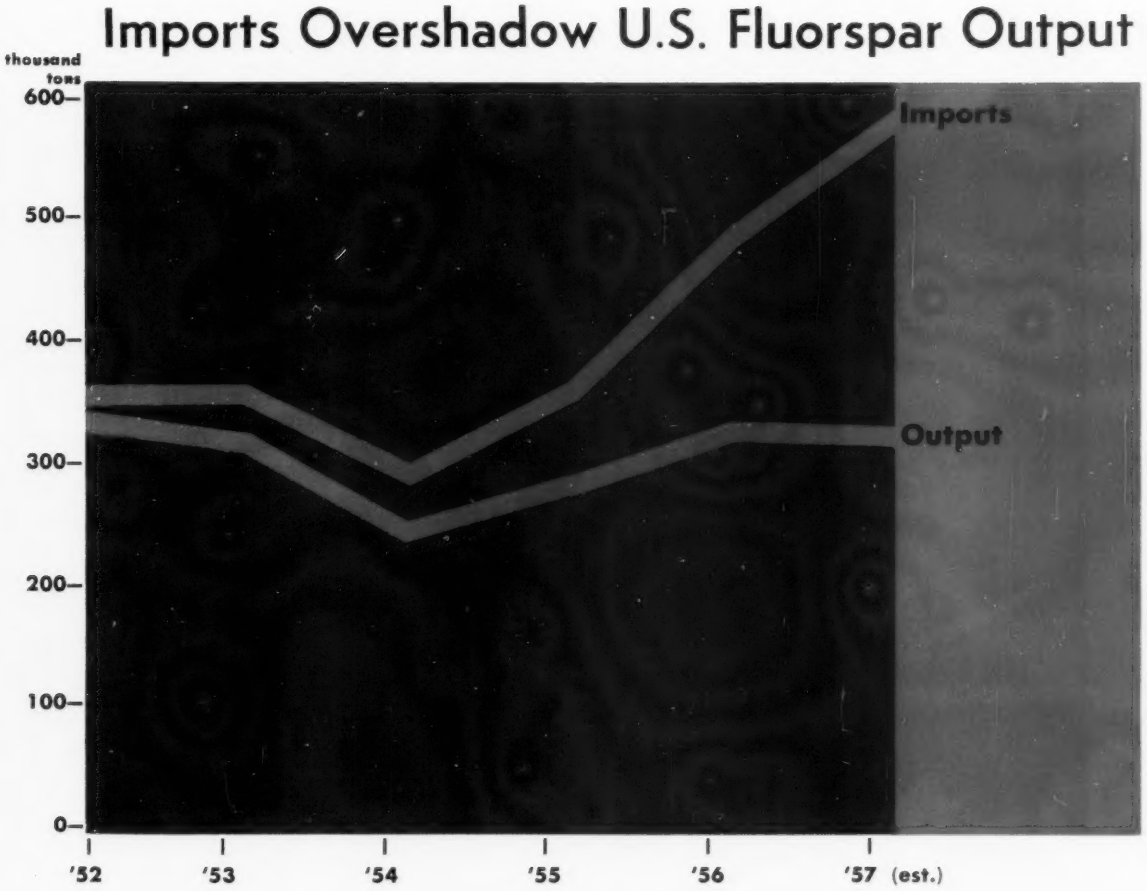


Fluorspar Imports Buffet U.S. Producers

This week, two bills aimed at protecting and bolstering the U.S. fluorspar industry are on the agenda of the House Ways & Means Committee. One would increase duties on imported fluorspar, the other would extend, through '59, government stockpiling of acid-grade fluorspar. But neither appears likely to be enacted—and here are the reasons why producers' reactions range from relief to disappointment.

The reaction of those not favoring the bills is summed up in the attitude of a spokesman for a company that imports and also mines domestically: domestic fluorspar production should be supplemented by imports because "imports help to conserve domestic resources—a necessary foresight to assure adequate supplies of the highly strategic material in times of national emergency."

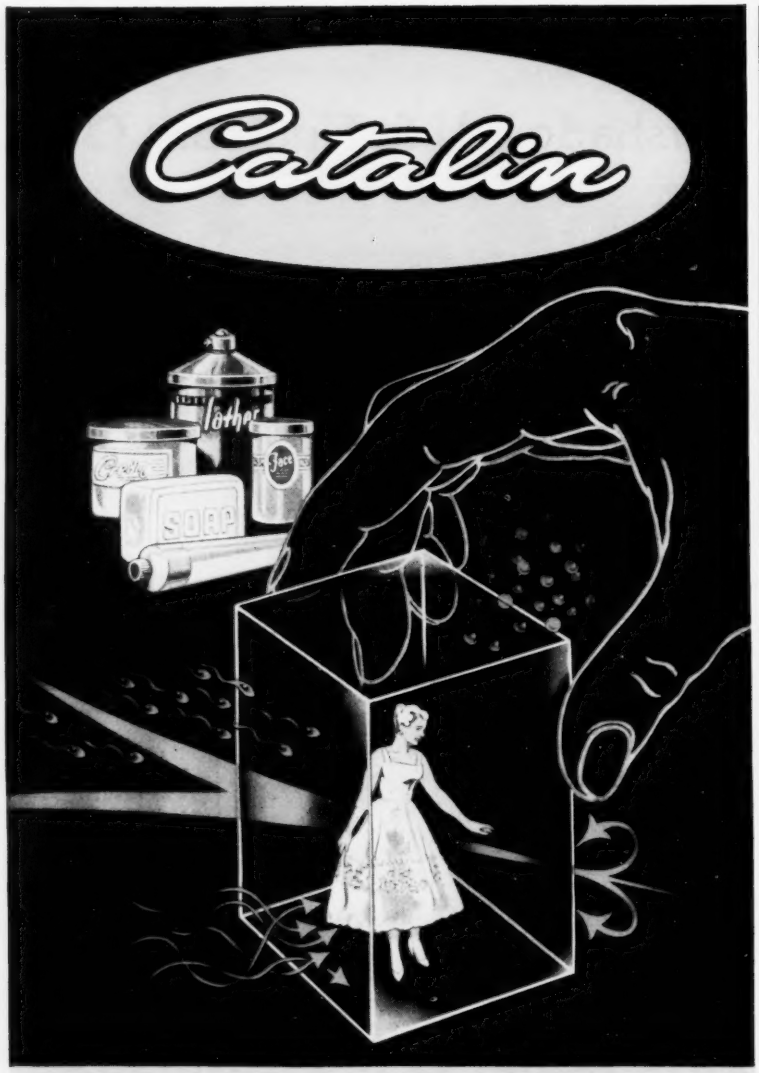
But other producers are keenly disappointed in the proposals' poor prospects. They argue that current imports do more than "supplement" domestic production, have actually grown to such proportions that the U.S. fluorspar industry's existence is threatened.

Imports Soar: And these producers have some good evidence supporting their stand. Fluorspar imports last year hit an all-time high of 580,000 tons, only 50,000 tons less than total domestic consumption and nearly double U.S. output. In '52, a total of 353,000 tons were brought in, just slightly more than local output.

Bearing out claims that domestic supplies are adequate, the U.S. Geological Survey of two years ago stated that known U.S. fluorspar reserves—containing 35% or more calcium fluoride—amounted to about 22.5 million tons. These reserves, the agency reported, are sufficient for another 30 years' production if mined at the rate of some 750,000 tons/year of crude ore.

Rising Demand: Consumption of fluorspar has been growing at a fast clip, climbed to 630,000 tons in '57, well above the 520,000 tons needed in '52. But domestic shipments have fluctuated, and producers haven't been able to make significant gains during this period.

In fact, to the dismay of U.S. fluorspar producers, domestic shipments in '57 reached only 325,000 tons; that's 2% less than in '56. Government



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stockpiling took 110,000 tons, the commercial market absorbed the remainder. Of the estimated 580,000 tons of imported fluorspar, about 120,000 tons went into government stockpiling; the rest was channeled into commercial outlets.

Prime Supplier: Mexico is today leading in shipments of fluorspar to the U.S. Last year, it sent some 400,000 tons here, a surging gain over '50's 73,000 tons. Italy shipped the U.S. some 115,000 tons in '57. Spain, Canada and Germany contributed modest amounts.

Steel Needs Lead: Top consumer of fluorspar is the steel industry, which uses the mineral as a flux in producing basic open-hearth and basic electric-furnace steel. In '57, demand by this industry was some 240,000 tons, 10% less than '56's 265,000 tons. It's apparent that demand will be even less in '58.

Hydrofluoric Acid Boom: Fastest-growing consumer of fluorspar has been the hydrofluoric acid industry. Last year, hydrofluoric makers consumed about 200,000 tons, compared with 70,000 tons in '50.

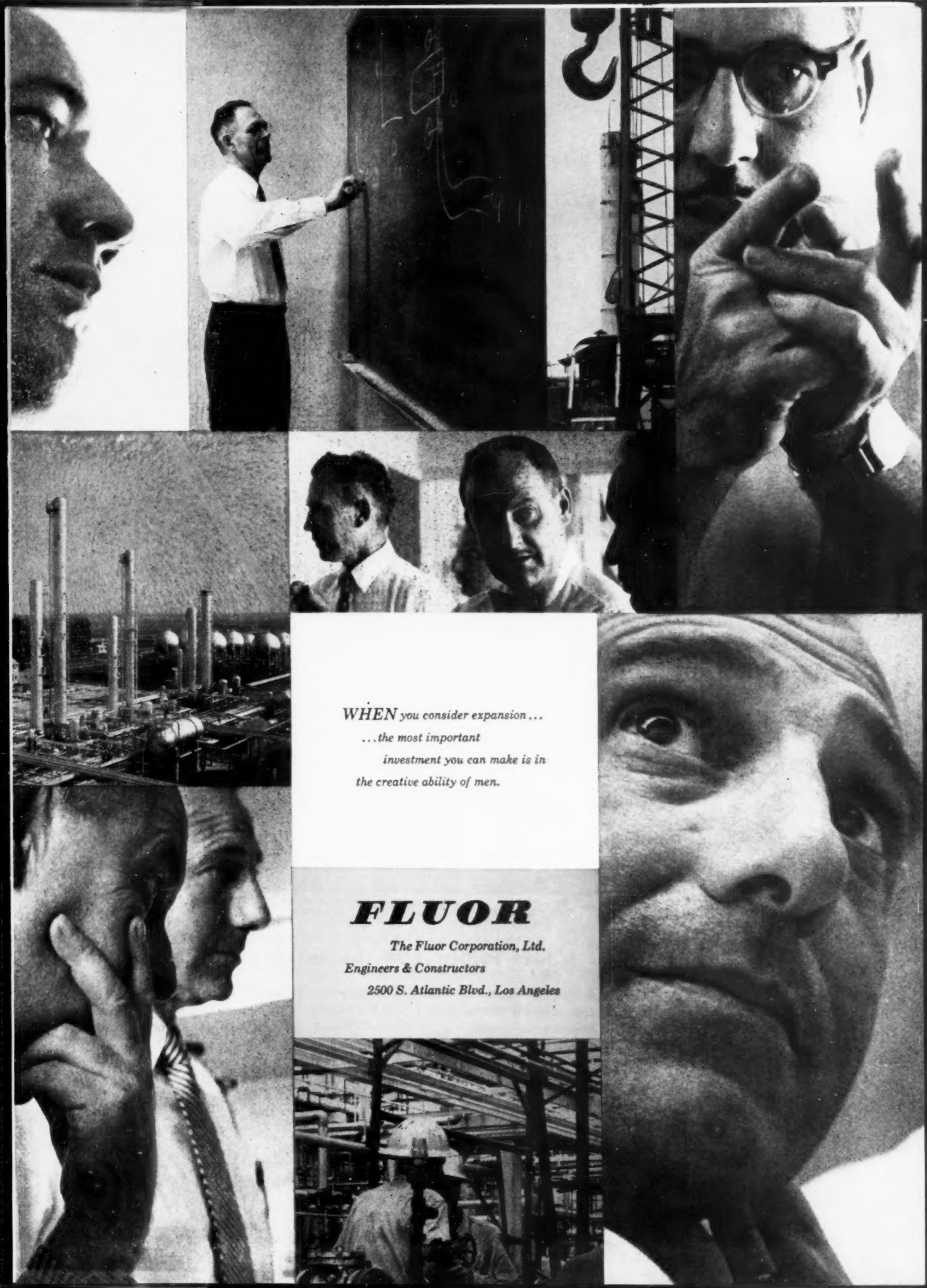
Factors propelling this demand:

- Hefty growth of output of fluorocarbon propellents.
- Demand by the Atomic Energy Commission for uranium production.
- Use of fluorine as an oxidizing agent in high-energy missile fuels.
- Fluoridation of community water systems.

Aluminum Demand Steady: Last year, some 110,000 tons of fluorspar went into production of aluminum fluoride and artificial cryolite, essential to electrolytic production of aluminum. And current demand represents an impressive 100% jump over the 55,000 tons taken in '50.

Other small but important users of fluorspar, including glass and enamel plants, and iron foundries, last year consumed about 70,000 tons.

Obviously, U.S. fluorspar producers aren't fretting about the condition of U.S. markets. Their only big complaint is that foreign producers are enjoying this healthy business condition more than are U.S. producers. And though the perennial fight to swing more of the fluorspar business toward U.S. companies is now going into another round in Washington, the running battle probably won't be settled for a long time.



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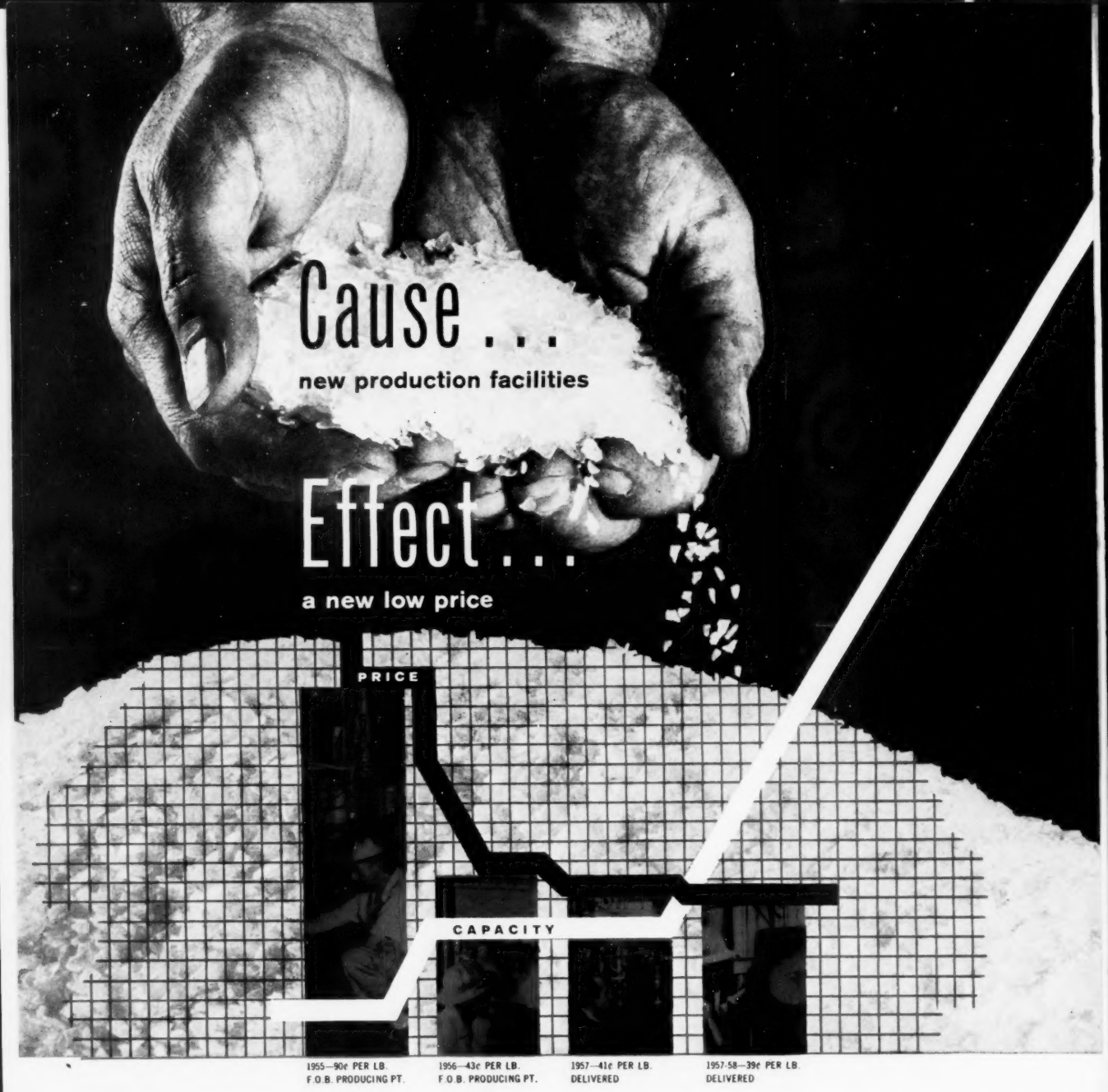

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The properties of this free-flowing polyol are of prime importance to the fast-growing polyurethane foams industry. Trimethylolpropane's ability to improve both rigid and flexible foams, coupled with its easier processing, offer extremely valuable manufacturing advantages. And in the large alkyd resins industry serving the $1.6 billion paint market, this chemical intermediate is also finding important application.

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Wrinkle resistance is the new wrinkle in cellulosic fabrics as . . .

Rayons Go Wash-and-Wear

Last week, at the annual parley of the Textile Research Institute at New York's Hotel Commodore, fabric makers heard of big plans for promotion of a novel synthetic fiber, got their first look at a new process to up-grade rayon.

The new rayon treatment is Courtaulds (Alabama) Inc.'s wash-and-wear rayon. Courtaulds' new finishing process—if textile makers find it acceptable—may make rayon a serious competitor in the wash-and-wear market created by noncellulosic synthetics.

The process, now being tested by several textile mills, is said to produce a fabric that will withstand at least 20 machine washings; i.e., after 20 washings, the garments need no ironing and pleats remain intact. Courtaulds says the treated rayon is less heat-sensitive than Dacron or nylon, can take drying temperatures up to 220 F without sacrificing any of its properties in the drying process.

Courtaulds (which rates second only to American Viscose Corp. in U.S. viscose production) isn't giving any details of its process. Trade experts believe, however, that it is similar to many of the conventional resin treatments, may be a urea formaldehyde used with a silicone and a compound to improve the hand. With modification, Courtaulds' finish can be applied to cuprammonium as well as to viscose fibers, but not to acetate. Courtaulds plans to license its process to other textile mills.

The success of wash-and-wear rayon in general may well depend on how thoroughly Courtaulds promotes its new process. So far, wash-and-wear rayons haven't been strongly sold. But with practically all rayon producers working toward a wash-and-wear fabric, the situation is likely to change. By '59, say trade experts, wash-and-wear rayon will have established itself in the marketplace as one of the standards.

Low-Cost: Even though cost of using the new process is likely to add 3-5¢/yard to the finished fabric, Courtaulds says that higher prices for wash-and-wear rayon won't be a marketing drawback. Rayon is the lowest-cost fiber available today and might become as much as 10% cheaper (*CW, March 8, p. 93*).

There's no problem with dyes, either. Aside from its low cost, one of rayon's biggest advantages is its affinity for dyes. Courtaulds' finishing process is always applied after its Coloray* treatment—and to the fabric, not to the fibers before they have been made into cloth.

Although the upgraded rayon has many important advantages, it does have one limitation. According to Courtaulds' Geoffrey Lund, "When the treated viscose is washed in an acid medium, it tends to lose its wash-and-wear properties more readily than it should." He is quick to point out, however, that the laundry procedures of most householders ensures alkaline washing.

Courtaulds' marketing experts expect to have the treated garments on shelves by early fall. Although the treatment can be successfully applied to rayon blended with cotton, it will be introduced in all-rayon garments such as men's shirts, childrens' clothes and pleated skirts.

Sales Push for PVC Fibers: While textile makers were eyeing Courtaulds' new rayon at last week's textile show, Societe Rhodiaceta (France), one of the pioneers in acetate and polyvinyl chloride fibers, was readying its plans to intensify U.S. marketing of Rhovyl 55 and Rhovyl T, two polyvinyl chloride fibers.†

Although both PVC fibers have been used in the U.S. for some years by Munsingwear, Inc., and National Filter Media Corp., they've never been promoted or advertised very heavily in the U.S. by the French company. Rhodiaceta's advertising campaign, slated to begin within two months, will push PVC as a fiber for industrial clothes, filtration fabrics, and drapery material.

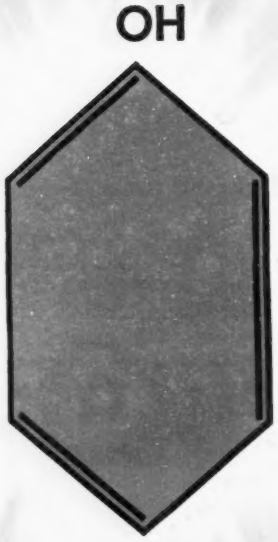
According to Rhodiaceta, main advantages of PVC are high chemical resistance, nonflammability (it won't even support combustion), thermal plasticity and lightfastness. The PVC fibers can be dope-dyed. Rhodiaceta's U.S. sales team envisions selling between 1-2 million lbs. of the PVC fibers to the U.S. in '58. Cost: $1.18/lb.

*Courtaulds' tradenamed process for dyeing rayon fibers.

†Rhovyl 55 will shrink 55%—it is used to produce special-effect fabrics. Rhovyl T is nonshrinking.

DESIGN

for cutting production costs



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SPECIALTIES

Siliconed Cottons

A silicone finish for cotton and cotton blends, durable to washing and dry cleaning has been developed by Dow Corning Corp. The new product, said to be the first silicone finish for cotton that withstands high-temperature machine washings, will be the eighth product marketed under Dow Corning's Syl-mer brandname. Mill runs of the new finish have been completed by Burlington Industries, Cramerton Division; Reeves Brothers, Fairforest Division; Cranston Print Works; and Mission Valley Mills. Runs are currently being conducted at Dan River Mills. Dow Corning says that limited yardage of Syl-mer processed cotton fabric will be ready for fall cutting.

PRODUCTS

What's in Them: Chemical Specialties Research Laboratories (Box 33, Ansonia Station, New York City), has just issued its '58 catalog listing analyses and reports on more than 1,500 tradename chemical specialties. The catalog also describes details of the company's service of providing five analyses monthly of the user's choice of any household and industrial specialties.

•

Polymerization Catalyst: A nonvolatile, high-temperature polymerization catalyst, tradenamed Luperox 2, 5-2, 5, has been developed by Lucidol Division of Wallace & Tiernan Inc. (Buffalo). Chemically, it is 2, 5-dimethylhexane-2, 5-dihydroperoxide. It's suggested for use in rubber and silicone industries.

•

Glossier Starch: A. E. Staley Mfg. Co. (Decatur, Ill.) is now marketing a new laundry starch, called Sta-Flex, for commercial laundries. Sta-Flex is said to give greater color brightness than other starches now on the market because of its film clarity. Staley says highlights, smears and "surface starch" are reduced.

•

Wetting Agent: Sole Chemical Corp. (Chicago) has just introduced Sole Terge S-2-S, a wetting agent said to be stable in both acids and alkalis. The sodium ethyl hexyl sulfate concentrate can be used in high dilution, is sold as a pale-green liquid.

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FS-7584, Chemical Week
520 N. Michigan Ave., Chicago 11, Ill.

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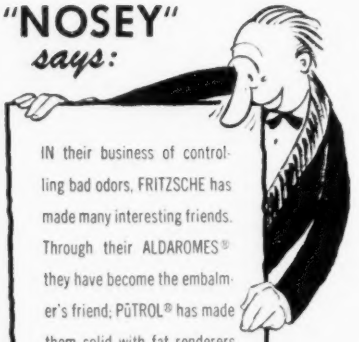

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Hydrochloric Acid • Formaldehyde • Glycerine • Phthalic Anhydride
Maleic Anhydride • Sebacic Acid • Ortho-Phenylphenol • Sodium Sulfite
Pentaerythritol • Pentachlorophenol • Sodium Pentachlorophenate
Sulfuric Acid • Methanol

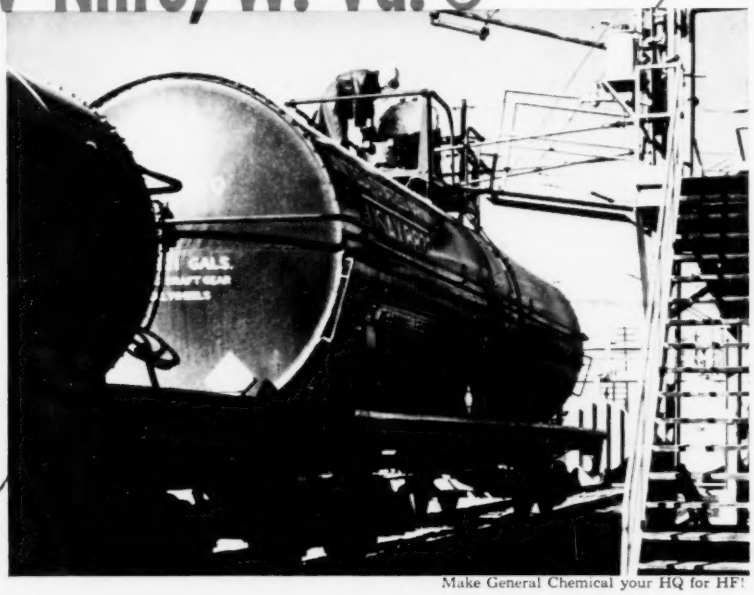
REICHHOLD CHEMICALS, INC.,
RCI BUILDING, WHITE PLAINS, N.Y.

General Chemical announces its

THIRD HF PLANT!

Now Nitro, W. Va. ③

① MARCUS HOOK, PA.



Make General Chemical your HQ for HF!

② BATON ROUGE, LA.

Construction is now underway for General Chemical's third hydrofluoric acid plant. Producing both aqueous and anhydrous acid, it will augment the company's already extensive HF capacity at Baton Rouge, La., and Marcus Hook, Pa.—and assure ample reserves to meet industry's needs for the foreseeable future.

Your Most Dependable Source of Supply for HF

General Chemical is the *only* supplier offering shipment from more than one producing location. In addition, it has five HF stock points at Buffalo, N. Y., Chicago, Ill., Cleveland, O., El Segundo, Calif. (Los Angeles), and Pittsburgh, Pa.

Also important to you is General Chemical's integrated raw materials position—your best protection against interruptions of supply. General owns and operates its own fluorspar mines and mills, and sulfuric acid plants. These, together with multiple, high-capacity HF plants, plus strict quality control all along the line, make *General* your most dependable source of supply for hydrofluoric acid.

First For Fluorine Chemicals

GENERAL CHEMICAL DIVISION

40 Rector Street, New York 6, N. Y.

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